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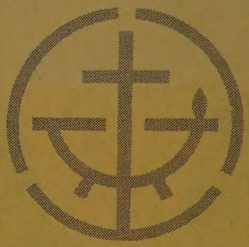

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NATURAL THEOLOGY

AND

MODERN THOUGHT.

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NATURAL THEOLOGY

AND

MODERN THOUGHT

THE DONNELLAN LECTURES,

Delivered before the University of Dublin, 1888–9.

BY

JAMES HOUGHTON KENNEDY, B.D.

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PREFACE.

IN these Lectures I have endeavoured to examine some points in which the results of modern research and the development of modern thought are supposed to have seriously affected the proofs of Natural Theology. It has, of late, come to be regarded as almost a settled matter, that the arguments on which Theists have hitherto relied, have in this way been so undermined that they have become antiquated and useless, so that it has become customary, even among Theologians, to speak of "the so-called proofs of Theism." The prevalence of this opinion concerning the doctrine which is the very foundation of all Theology, seemed to me to render it advisable that a careful examination should be made of some of the leading

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proofs of this doctrine, in direct connection with the facts or theories which are supposed to have invalidated them.

In the first Lecture I have considered the Veto of Positivism, which meets us at the very threshold of our inquiry, and claims the right to prohibit all belief in a Personal God as an attempt to travel beyond the limits of experience.

The second Lecture deals with the question of Materialism, which is so prominent in the present day. I have included in it an account of two treatises of Du Bois-Reymond, on *The Limits of Physical Science* and *The Seven Enigmas of the World*, and of the controversy which their publication excited in Germany. The whole controversy appears to me to illustrate in a remarkable way the theory of modern Materialism and its real bearing upon the subject of this inquiry.

The chief cause, however, of the prevalent habit of depreciating the evidences of Theism, is to be found in the general estimate which

has been formed of Darwin's theory of Natural Selection, and of its bearing on those evidences. The estimate of which I speak is not confined to writers of one school of thought. It is accepted triumphantly by the opponents of Theism, more or less reluctantly by many Christian Theologians. It would be easy to multiply quotations in illustration of this, but I shall confine myself to quoting one passage from a philosopher of high repute, who is generally regarded as occupying an intermediate position between Atheism and Christian Theism. In his work on *Cosmic Philosophy*, Mr. Fiske writes thus:* "From the dawn of philosophic discussion, Pagan and Christian, Trinitarian and Deist, have appealed with equal confidence to the harmony pervading nature as the surest foundation of their faith in an intelligent and beneficent Ruler of the universe. We meet with the argument in the familiar writings of Xenophon and Cicero, and it is forcibly and eloquently maintained by Voltaire as well as by Paley, and, with various

* Fiske's *Outlines of Cosmic Philosophy*, vol. ii., pp. 396, 397.

modifications, by Agassiz as well as by the authors of the Bridgewater Treatises. One and all they challenge us to explain, on any other hypothesis than that of creative design, these manifold harmonies, these exquisite adaptations of means to ends, whereof the world is admitted to be full, and which are especially conspicuous among the phenomena of life. Until the establishment of the Doctrine of Evolution, the glove thus thrown, age after age, into the arena of philosophic controversy was never triumphantly taken up. It was Mr. Darwin who first, by his discovery of natural selection, supplied the champions of science with the resistless weapon by which to vanquish, in this their chief stronghold, the champions of theology. . . . It needs but to take into the account the other agencies in organic evolution besides the one so admirably illustrated by Mr. Darwin, it needs but to remember that life is essentially a process of equilibration, both direct and indirect, in order to be convinced that the Doctrine of Evolution has once for all deprived natural

theology of the materials upon which until lately it subsisted."

In the fourth Lecture I have challenged this widely prevalent estimate of the Theory of Natural Selection, and have endeavoured to show that in the Beauty and Sublimity of the Universe we are confronted by characteristics to which this theory cannot by any possibility be made to apply, characteristics which are displayed upon the vastest and most stupendous scale, so that the proofs of Design which they furnish are drawn from the whole of nature, instead of being confined to organized bodies, as was the proof derived from useful adaptations. In order to establish this proof on a firm basis it is, of course, necessary to examine the objections which Kant by anticipation brought against it, as well as his theory of the Sublime, an examination which I cannot find that any one has attempted hitherto.

In the fifth and sixth Lectures I have discussed some questions connected with the Moral Proof of Natural Theology; and in the concluding portion of the sixth Lecture I have spoken of

the charge of Anthropomorphism, which in the present day is so frequently brought against all Theology.

If this book be objected to as apologetic in character, I would ask the objector to consider whether every writer who seeks to establish any conclusion, either positive or negative, might not with equal propriety be described as apologizing for that conclusion. The evidence which I have given in support of the results at which I have arrived is almost invariably the evidence of hostile witnesses. I have not knowingly mis-quoted or misrepresented any one; nor have I ever sought to supplement argument by abuse.

In referring to works printed in German, I have employed the usual abbreviation S. for *Seite,* or page. The mark §, which appears sometimes in the footnotes, refers to the sections which are so marked in Kant's *Urtheilskraft* and in the works of Herbert Spencer. These sections are the same in all editions.

I have gratefully to acknowledge the kindness of the Rev. J. H. Bernard, B.D., Fellow of

Trinity College and Archbishop King's Lecturer in Divinity in the University of Dublin, and of the Rev. H. J. Lawlor, B.D, who have read and corrected the proofs of these Lectures.

November, 1890.

ANALYSIS OF THE LECTURES.

LECTURE I.

THE VETO OF POSITIVISM.

	PAGE
The doctrine of Theism, a special object of attack in the present day	3
This attack favoured by the current depreciation of the proofs of Natural Theology	4
This depreciation has not been caused by any discovery that there is less order and proportion in Nature than had hitherto been supposed	5
Language of opponents	7, 8
Objection that we cannot travel beyond the limits of experience	9
This objection is supposed to be strengthened by the rejection of Metaphysics	10
Examination of this supposition	11
Modern Physiology and the limits of experience	13
Desire of Comte to restrict scientific inquiry	17
He wished to forbid the study of sidereal Astronomy	18
And objected to the conception of Force	18
The limits of experience and the hypothesis of an Æther	21
Need of a definition of "Experience"	23

LECTURE II.

DESIGN AND MECHANICAL LAW.

The progress of Science asserted to involve the extension of the province of matter and causation and the concomitant gradual banishment from all regions of human thought of spirit and spontaneity	31
How far can this gradual banishment possibly be carried?	32
Theory of Descartes about animals	32

PAGE

More rigid theory of the later Cartesians 35
Extension of this theory to the frame of man . . . 35
Modification of the theory thus rendered necessary; automata now regarded as *conscious* 36
Significance of this modification 37
Professor Clifford's warning of the consequences which must result from the admission of any causal power in the human will 37
Controversy on this subject in Germany caused by a treatise of Du Bois-Reymond 42
La Place's illustration of the greatest possible perfection of physical knowledge 42
Du Bois-Reymond maintains that the origin of life would present no insurmountable difficulty to a being possessed of this knowledge 44
The first necessary limit to the knowledge of such an intelligence 46
The second limit, the origin of motion 46
The third limit, the origin of consciousness 48
Distinction pointed out by Du Bois-Reymond between the proposition "Consciousness is bound up with mechanical conditions" and the proposition "Consciousness is capable of being mechanically explained" 49
The appearance of Design in Nature regarded as an enigma . 52
Du Bois-Reymond's feeling towards Darwin's theory of Natural Selection 52
The question of Freewill stated by Du Bois-Reymond . . 54
Wherein the enigma here consists 55
Solution proposed by some French mathematicians . . 56
Criticism of Du Bois-Reymond on this solution . . . 57
The place of Consciousness among the Enigmas of the Universe 58
Several of these Enigmas seem to point to one particular solution 59
This solution referred to by Du Bois-Reymond . . . 62
He prefers the alternative of Pyrrhonism 62
Du Bois-Reymond denounced by some Materialists as unorthodox 63
The theory of the extreme Materialists 64
Logical result of this theory 65

PAGE
Bishop Berkeley's statement of his doctrine of Idealism . . 66
This doctrine cannot be refuted by reasoning alone . . 67
Denunciation by Herbert Spencer of the tyranny of Reason in this matter (note) 67
The assertion that we either perceive or can infer something different in kind from our sensations and ideas, a necessary assumption for all opponents of Idealism . . 68
Theory of Haeckel about the atoms 69
Criticism of the theory 70
Statement of materialistic doctrine by Lange . . . 71
Consequences of the theory thus propounded . . . 75
Theory of Leibnitz 77
Difficulty of accepting half of Leibnitz's theory and rejecting the other half 78
Professor Huxley's illustration of the relation of consciousness to the movements of the body 79
One-sided examination of evidence by Materialists . . 81
Hume resolves cause and effect into antecedent and consequent 82
Evidence for regarding Design as an antecedent . . . 83
Power of prevision conferred on us by means of this antecedent 84
Prevision declared by Comte to be the test of science . . 85
Objection that our will is sometimes baffled 86
Examination of the supposition that Materialism is more favourable to Science than Idealism is 90
Relative strength of Idealism and Materialism in an appeal to reason 94
Bearing of the fact upon theories of Du Bois-Reymond, Spencer, and Bain 95
The evidence of causation in the mental series of antecedents and consequents is stronger than in the mechanical series in three particulars 99
Nature of the enigma by which we are confronted in this whole question 101
Parallel between this enigma and that which confronts us when we try to account for our knowledge of an external world 102
Result of the establishment of the causality of the human will 105

LECTURE III.

DESIGN AND NATURAL SELECTION.

PAGE

Important bearing on the Design Argument of the conclusion reached in the Second Lecture 112
Assertion that the Design Argument has been overthrown by the explanation of all the phenomena of the Universe as the necessary result of the persistence of force and the primary qualities of matter 115
This objection is based upon a principle which is necessarily universal in its application 116
An argument from analogy cannot be overthrown in this way. 117
The principle of Design made known to us by our consciousness 118
Our belief in the designs of our fellow-men based on analogical reasoning 119
Peculiarity of the mode in which Design acts as a cause . 121
How can a future which as yet does not exist influence the present? 121
Error of identifying Development with Natural Selection . 125
The charge of wastefulness brought against Nature . . 130
Helmholtz on the eye 131
Two hypotheses before us 135

LECTURE IV.

THE BEAUTIFUL AND SUBLIME.

The Beauty and Sublimity of the world challenge inquiry . 139
Our experience reveals to us a cause of Beauty . . . 140
The worker in any beautiful art has to choose and select between possible combinations 141
The idea of an as yet unrealized future moulds and guides what is happening in the present 141
All agree in extending the inference derived from our experience in this matter, so as to take in a large number of objects in which beauty is to be found 142
Will the theory of Natural Selection explain the beauty of the world? 142

PAGE
Darwin's explanation 142
This explanation in reality differs from that of *Natural* Selection by the introduction of a new element . . . 143
Fundamental nature of this difference 144
Can the beauty which Nature manifests on a vast scale be thus accounted for? 145
The prominence given in the present day to the theory of Natural Selection in the Theistic controversy greatly increases the importance of the proof derived from the existence of Beauty and Sublimity in Nature . . . 146
Kant appears to have anticipated its importance in some measure 147
He speaks of the "limitation" of the proofs of Natural Theology as manifestly advantageous 147
His first objection against our inferring Design from the Beauty of Nature 148
Consideration of this objection 149
His second objection 150
Consideration of this objection 151
Professor Tyndall on crystallization 154
Kant's third objection 156
Consideration of this objection 158
Kant declares that the sole cause of the Sublime is to be found in ourselves and in our way of thinking . . 163
His statement of the origin of the feeling of the Sublime . 163
He divides the Sublime into the mathematically sublime and the dynamically sublime 164
The characteristic of the former is vastness or number, and of the latter, power 164
The Sublime must be absolutely and not merely relatively great; therefore no object of Nature can on this ground be called Sublime 164
He shows how comparative greatness, though not sublime in itself, may furnish the occasion for awaking in us the idea of the Sublime 165
His explanation of the dynamically sublime 166
He refers to Burke on *The Sublime and Beautiful* . . . 166
Burke's theory of the Sublime 166
Kant gives instances to show that the Sublime is not in Nature but in our spirit 168

PAGE

We may agree with Kant in holding that sublimity belongs properly speaking to the spirit, while dissenting from his assumption that it has no objective being, and exists solely in the mind of the percipient 169

In admiring the fortitude of a hero, we admire what is external to ourselves 169

Conformity to law from a principle of duty is praised by Kant as sublime 170

This seems inconsistent with the assertion that the external occasion of this feeling is generally the disorder and lawlessness of Nature 170

Kant denies sublimity to stormy agitations of the spirit which leave no good result behind them 170

The creative genius of man can impart a sense of the Sublime as well as of the Beautiful 174

We perceive the same contrast between the Sublime and the Beautiful, in the works of man as in the works of Nature 176

In the works of man mere lawlessness and violence never produce Sublimity 178

Beauty and Sublimity combined in the starry heaven . . 180

And in the Northern Lights 180

Burke anticipates this objection to his theory, and seeks to meet it by urging that black and white may blend though they are opposites 182

When opposites blend, they weaken each other . . . 183

Beauty and Sublimity combine with the result of enhancing the effect, instead of weakening it 183

Ugliness the true opposite or contradictory of Beauty, and Meanness of Sublimity 183

Many of the objects brought forward by Kant to show the opposite nature of Beauty and Sublimity, really illustrate their union 184

Kant believed that shades of colour are not to be classed as beautiful 184

He admitted at the same time that if colour is caused by the undulations of the æther, its claim to rank as beautiful cannot be rejected 185

This doctrine is now part of the accepted creed of science . 185

The cause of the beauty of distant objects is thus shown to be positive, not negative 185

PAGE

Modern Science is in this way revealing adaptations more marvellous than anything hitherto known to man . . 187

What impresses us in Nature is not mere vastness, but the vastness of an ordered system 189

Picture drawn by Tyndall of a universe without ætherial undulations 190

The universe as it is actually constituted is characterized by a startling profusion of Beauty 191

The wonder and reverence with which Nature inspires us is not due to an illusion 192

LECTURE V.

DETERMINISM AND THE WILL.

The controversy about Human Responsibility, Conscience, and Freewill is supposed to have received a new direction from some recent conclusions of Physical Science . . 197

Position assumed by Bishop Butler with regard to Fatalism . 198

The progress of Physical Science since Butler's day is supposed to have strengthened the proofs of Determinism and to have weakened the significance of the verdict given by Man's Moral Sense, by making known its origin and development 200

Though Determinists make use of arguments of a materialistic tendency, their theory is distinct from that of Materialism 201

Statement of the case by Professor Sidgwick . . . 204

Our controversy with Determinists solely concerns their denial that man has any power of choosing between principles of action, and is responsible for the choice made 206

Inquiry whether the doctrine of the Conservation of Energy supports Determinism 217

Statement of Professor Graham on this subject . . . 219

Argument against the authority of Conscience derived from the doctrine of Development 324

The principle that we should interpret the more developed by the less developed 229

This principle tested by its application to another case of Development 230

LECTURE VI.

KANT AND THE MORAL PROOF.

PAGE

Influence of Kant on modern thought 235
Subjective character of the Moral Proof according to Kant . 237
He maintains that we derive from this source the idea of Infinite Power and Wisdom 239
He asserts the complete independence of the moral and physico-theological arguments 240
Examination of this assertion 241
Possibility of combining the various proofs 242
Difficulties connected with the existence of evil . . . 258
Theory of Mill on this subject 259
The charge of Anthropomorphism 260
Improper use of this term 261
Mr. Fiske on Cosmic Theism 262
His solution of the problem of the existence of pain . . 264
Statement by Dr. Salmon on the subject 265
Opposite conclusions drawn from the same premises . . 266
Anthropomorphism and the beauty of Nature . . . 272
Warnings in Scripture against Anthropomorphism . . 272
The doctrine of the Holy Trinity 273
Essential difference between our knowledge of mind and of material objects (note) 274

LECTURE I.

THE VETO OF POSITIVISM.

"*For the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even His eternal power and Godhead.*"—Rom. i. 20.

LECTURE I.

THE VETO OF POSITIVISM.

AN avowed opponent of Natural as well as Revealed Religion asserted some years ago that the questions the answers to which would, as he believed, decide the Theistic controversy in the way that he desired, were only then beginning to receive the right kind of attention;* and I think that any one who has marked the course of contemporary literature can hardly fail to be struck by the amount of attention of this hostile kind which is being directed to Natural Theology, both in England and in Germany. In the latter country, Lange, the historian of Materialism, speaking of those who wish to retain in their creed the doctrine of Theism and that alone, describes their position as a narrow strip of land surrounded by the invading waves of Materialism; and asserts that it is not with doctrines like the Atonement

* *Body and Mind*, by Professor Clifford. *Fortnightly Review*, No. xcvi. New Series, p. 735.

which they reject, but precisely with that one doctrine which they propose to retain that the influence of scientific discoveries comes into sharpest conflict. *

From a period somewhat earlier than the date of these attacks there has prevailed in both these countries a habit of depreciating the arguments of Natural Theology as antiquated and valueless, which has fostered a tone of opinion eminently favourable to its assailants; hence it has come about, that whilst their opinions, when they appear in books or reviews, attract eager attention, there is a general disposition to be impatient of anything which is written on the defensive side.

* "Wenn endlich gefragt wird, warum die protestantische Welt sich mehr und mehr von der Orthodoxie abwendet und wenn die Antwort im Einflusse der Entdeckungen der Wissenschaft gefunden wird, so müssen wir dagegen bemerken, dass diese Entdeckungen gerade in den schärfsten Conflict treten zu dem, was die Reformtheologen aus dem Inventar des Christenthums noch beibehalten wollen, während sie zu andern Lehren, wie z. B. zu derjenigen vom stellvertretenden Opfertode des Gottessohnes sich weit indifferenter verhalten. Es ist ein gar schmaler Streifen rings umspülten Landes, auf welchem sich diese Reformtheologie gegen die Wellen des andringenden Materialismus zu behaupten sucht."—*Geschichte des Materialismus* von Lange, Zweites Buch. S. 502.

Fashion has sometimes a powerful influence on matters of opinion, so that to represent an argument as being out of date may be an effectual way of preventing it from obtaining a hearing, and thus of having it condemned without any fair trial ; yet surely, in the interests of the sacred cause of truth, which are so often invoked, we should jealously guard against any such usurpation of her authority, by taking care that no doctrine be condemned upon one-sided evidence, and no argument rejected till it has been shown to be unsound or inconclusive.

Now, in the first place, the assumption that the progress of modern thought has invalidated the arguments of the Natural Theologian is certainly not founded on any discovery that the existence of order and proportion in Nature, to which writers on Natural Theology have often pointed, has been shown to be less prevalent or less striking in the wider field which modern research discloses to man. However far Science may wing its daring flight, it still finds that it has to do with a Cosmos, never with a Chaos.

With respect to this, every branch of science tells a similar tale: chemistry makes known laws the most exact and wonderful, governing all the combinations of its elements; the microscope discloses a world of order and marvellous adaptation where the unassisted eye could see nothing but shapeless particles; while the telescope, as it penetrates the depths of space, displays to us a reign of law on a scale so magnificent that the imagination sinks back, baffled from every attempt to realize its vastness. Were it not for the far-reaching harmony and unity of plan which thus prevails in nature, the triumphs of modern science never could have been won. "One of the great charms of the study of nature," says a celebrated discoverer, "lies in the circumstance that no new advance, however small, is ever final. There are no blind alleys in scientific investigation. Every new fact is the opening of a new path." *

The perception of this has caused it to be

* From a Paper read before the Royal Institution of Great Britain, on 6th February, 1880, by W. Huggins, Esq., D.C.L., LL.D., F.R.S., M.R.I.

generally admitted, that the question at issue here is rather about the interpretation of the facts than about the facts themselves; thus Mr. Herbert Spencer goes so far as to declare, that those who hold it legitimate to argue from phenomena to noumena may rightly contend that the nebular hypothesis implies a First Cause as much transcending the conception of the Natural Theologians of last century as their conceptions surpassed the fetish of the savage.

And even as to the interpretation of these facts, our opponents frequently seem to show that they find it impossible to avoid using language which harmonizes with and suggests the interpretation that they reject. Severe criticisms are often passed upon an incorrect way of stating the teleological argument which is contained in the phrase, "Design implies a Designer." It is objected, that this method of stating the question involves a *petitio principii*, and that one of the very points we have to prove is, that there is Design in nature. Now, if we assume that this criticism is just, it becomes a noteworthy fact, that we find language which

implies this disputed premiss employed by those students of Nature who are most opposed to what is called the Design Argument. Thus Haeckel, after scornfully declaring that the much-talked-of purpose in Nature has no existence, so far forgets himself that, when defining organic bodies, he says, "In them we can almost always prove a combination of heterogeneous parts (instruments or organs) which co-operate together for the *purpose* of producing the phenomena of life."* And a vehement advocate of Materialism like Buchner speaks of mechanical *contrivances*, and describes Nature as achieving results by means; while the works of Darwin are full of similar expressions. In short, those writers who oppose what we believe to be the true inference, nevertheless (when they would describe the operations of Nature) go so far with us that they make use of language which,

* Organismen oder Organische Naturkörper nennen wir alle Lebewesen oder belebten Körper, also alle Pflanzen und Thiere, den Menschen mit inbegriffen, weil bei ihnen fast immer eine Zusammensetzung aus verschiedenartigen Theilen (Werkzeugen oder Organen), nach zuweisen ist, welche zusammenwirken um die Lebenserscheinungen hervorzubringen. *Natürliche Schöpfungsgeschichte*, von Dr. Ernst. Haeckel, S. 4.

if it were employed in argument by Theistic reasoners, would be severely censured as begging the question in favour of the doctrine of Theism.

And further, it is even admitted by some of the ablest of those who use this language, that the inference to which it seems to point is at times pressed upon them with considerable force by the observation of some of the phenomena of nature. Thus, Professor Huxley, after describing the development of a living creature from an egg, declares that "after watching the process hour by hour, one is almost involuntarily possessed by the notion that some more subtle aid to vision than an achromatic would show the hidden artist with his plan before him." *

Nevertheless, the very writers who use language such as this, assert that the progress of modern thought has furnished counter arguments which forbid us to draw the inference which their own words might seem to suggest; and, first of all, some of them meet us at the very threshold of our inquiry with the frequently repeated objection,

* Huxley's *Lay Sermons*, p. 261.

that to draw any inference from nature to an Intelligent Author of nature is to travel beyond the limits of experience; and that this is, and must always remain, impossible for the human mind.

This limitation of our knowledge is often believed to be forced upon us by the contrast between the triumphs won by physical science and the barrenness with which metaphysical inquiry is reproached. It is supposed, in fact, that the rejection of metaphysical philosophy in some way strengthens the logical position of those who would reject Theism. Thus Dr. Martineau tells us how an English Positivist, on hearing that an American philosopher of whom he had entertained a high opinion had come to believe in the immortality of the soul, broke in with the exclamation,—"What? John Fiske say that? Well; it only proves what I have always maintained, that you cannot make the slightest concession to metaphysics, without ending in a theology!" *

* *A Study of Religion*, by James Martineau, D.D., LL.D. Preface, p. vii.

Now, the great problem of Metaphysics has sometimes been defined as being the solution of the question, "How is knowledge possible?" and the history of metaphysical inquiry in these countries strikingly accords with this definition. But it is important to bear in mind that this is not an inquiry into the origin of metaphysical or theological knowledge only, but into the origin and foundation of all human knowledge, including of course all physical science. It is not so much after a long journey on the path of knowledge, as in the consideration of the very first steps which we take, that difficulties and perplexities meet us. What is the origin and justification of our beliefs about the constancy of nature; about space and time and matter,—nay, about the very existence of an external world? These questions (touching as they do the foundation of all scientific knowledge) have engaged the mind of man from the earliest dawn of philosophy. Metaphysicians were not persons who out of mere perversity rejected everything that was near them and reached out into the infinite distance in search

of mysterious problems; on the contrary, it was often a desire to begin at the beginning and to take things in their logical order which set them to work upon the problems that engaged them.

Now, Empiricists certainly do not abandon these profound investigations with the intention of thereby giving up all knowledge whatsoever; but, on the contrary, because, instead of spending time in trying to prove the possibility of knowledge, they have resolved to assume its possibility, and to act on that assumption. The adoption of this intellectual standpoint weakens instead of strengthening their claim to draw rigid lines excluding any inquiry which has hitherto been supposed to be within the scope of human thought. There is much force in the observation of Kant, that the understanding which is occupied merely with empirical exercises, and does not reflect on the sources of its own cognition, may exercise its functions very well and very successfully; but that there is one thing which it is quite unable to do, *i.e.*, to determine the bounds that limit its employ-

ment, and to know what lies within or without its own sphere.

Still, it may be urged in reply, it is not merely the rejection of metaphysical philosophy, but what we have been able to put in its place,—the positive results of science,—that give us a logical vantage-ground for drawing this line of exclusion. The department of Science which, it is hoped by Materialists, will supersede Metaphysics, is of course Physiology. Does then Physiology make clearer to us the origin and grounds of our knowledge of physical nature, removing enigmas which metaphysicians sought in vain to solve, and rendering unnecessary postulates which it has hitherto been supposed must necessarily be made in order to have a field of experience at all?

So far is it from doing this, that where it approaches nearest to the borderland of metaphysics, in the physiology of the brain, it raises difficulties that have a surprising resemblance to those which the Idealist presses upon us on altogether different grounds; and it increases our sense of

the magnitude of the postulates that we must make if we are to have any belief in an external world and the doctrines of science which relate to it.

For we are told that Modern Physiology reveals the fact that the sensation of sight does not, as was previously supposed, arise in the eye, nor that of hearing in the ear, but that the organ of sensation for every sense alike is in the brain. The undulations of light are thus not the immediate cause of the sensation of light; for they go no further than the eye, while the brain within the head is in a dark chamber into which no ray of light can enter. "What we directly apprehend," says Helmholz, "is not the immediate action of the external exciting cause upon the ends of our nerves, but only the changed condition of our nervous fibres." * And in another part of the same treatise he maintains that "The most complete difference offered by our several sensations,—that namely between those of sight,

* *The Recent Progress of the Theory of Vision.* Translation by E. Atkinson, Ph.D., F.C.S., p. 204.

of hearing, of taste, of smell, and of touch,—this deepest of all distinctions, so deep that it is impossible to draw any comparison, of likeness or unlikeness, between the sensations of colour and of musical tones,—does not, as we now see, at all depend upon the nature of the external object, but solely upon the central connections of the nerves which are affected." *

With the light which Modern Physiology thus casts upon the subject, when we face the problem, how any truths about an external world can enter within the limits of our experience, there appears a startling discrepancy between what we should from a materialistic standpoint have expected those limits to be, and the actual scope of our knowledge.

We look up at night and become conscious—not of a current passing along the optic nerve in the vicinity of the brain, though we might have supposed that this alone could have come within the limits of our experience; nor yet are we conscious of the last of the series of undula-

* *Ibid.*, p. 226.

tions of the ether which was the immediate cause that set that nerve-current in motion; but what we are conscious of perceiving, is the disk of a planet, whose light, moving with the inconceivable velocity of 186,328 miles a second, has, by means of a succession of these undulations, been travelling through space for an hour before it reached our eye; or it may be the light of a fixed star that we see, the undulations from which (moving with the same tremendous velocity) have been transmitted through space before they reached our earth for a period that is reckoned, not by hours, but by years. Or, to take the sense of hearing, we listen to a page of Herodotus; and the objects which we become conscious of are not the nerve-currents passing through the chamber of our brain, nor yet the aërial waves beating against the tympanum of the ear outside; these objects do not, as we listen, enter our field of experience at all. What do enter there, are the thoughts of an author who died more than two thousand years ago, the scenes of a vanished civilization, and the words and acts of a people who

have long passed away. In truth, the great mystery of our knowledge consists in the powerlessness of apparent limiting conditions to circumscribe our range, when we might have supposed that they would have hemmed us in and prevented us from taking a single step. Thus, whenever we try to look back over the way that we have come, there loom there behind us what appear insuperable barriers to thought; how we passed them, none can tell. But that the journey has been really accomplished, and the path has been a right one, seems at least to be assured to us by the well-ordered region into which that path has brought us.

Though the leaders of Positivist thought have, like other men, to begin by assuming the postulates of empirical perception, it is interesting to notice the jealous care with which, in the subsequent steps that have to be taken, some of them have sought to prevent the field even of scientific inquiry from being widened too much in any direction that might appear to infringe the limits of knowledge which they have laid down. Thus,

Comte repudiated Sidereal Astronomy as beyond the range of human knowledge, and sought to limit the science to the solar system; and though this restriction was a purely arbitrary one,—for our knowledge of the stars does not in reality differ generically from our knowledge of the planets,—there was another of his proposed limitations in which a principle of no little importance is involved.

I refer to his proposal to abolish all dynamical conceptions, and prohibit the very use of the word Force, as expressing something which is not and cannot possibly be a phenomenon.

We naturally unite so closely in our minds the impressions which we receive from nature with much which we read into it, that we may at first be slow to recognise the fact that our idea of force or energy does really belong to the latter class; that it is one of the things which we read into nature. We see everywhere matter in motion, we observe one change succeeding another; that is all that our senses tell us,

and if we were ourselves mere passive observers of nature, it is all that we could ever know. No eye has ever yet beheld anything answering to what we call force or energy passing from one body to another: the most powerful telescope, the minutest microscopic analysis could not have helped us here. But by effort we set things in motion, or we resist their motion towards us; and by effort we produce a sense of pressure in ourselves when we push against some object; and thus we come to attribute an amount of force to movements of bodies and to pressure proportionate to that which we must exert to produce like results.

It was because of this anthropomorphic origin of the idea that Comte regarded it as a matter of vital importance to the logical stability of his system, to get rid of the idea of force; he had, however, very little success with scientific men. The celebrated Herschel, for instance,* while declaring emphatically that it is our own immediate consciousness when we exert force to put matter

* *Treatise on Astronomy*, ch. vii. pp. 232, 233.

in motion or to oppose and neutralize force, which gives us this internal conviction of power and causation, was at the same time as little disposed to give up this conviction at Comte's bidding as he was to submit to his restrictions on Astronomy. Grove, too, the author of the well-known work on the *Correlation of Physical Forces*, admits that "the word and the idea it expresses may be objected to, as representing a subtle mental conception, and not a sensuous perception or phenomenon," but pleads at the same time its indispensableness, and urges that it has a potential meaning, to depart from which would render language unintelligible. And though Du Bois-Reymond has more recently renewed Comte's protest, complaining that force is nothing but a product of our irresistible tendency to personify, and asking, "What do we gain by saying that it is reciprocal attraction by which two particles of matter approach each other?"* yet, in spite of this writer's high authority, scientific men show

* Du Bois-Reymond, *Untersuch, über thierische Electricität.* Berlin, 1848. I. Bd., Vorrede, S. XL. u.f.

less and less disposition to renounce the doctrine which he proscribes. Science is every day becoming more dynamical; and the results seem to show that in following out this idea we are moving on the lines of Nature.

How little Modern Science is disposed to restrict its inquiries within such limits as were laid down by Comte, is strikingly shown in recent researches respecting the luminiferous æther and the undulatory theory of light. The object which these researches deal with is one which manifests itself to no organ of sense; it is intangible and invisible. We are here so utterly without any material supplied by sense, that Professor Tyndall is almost disposed to call the faculty of the mind which grasps it "a power of creation which is brought into play by the simple brooding upon facts"; * yet at the same time he is careful to tell us that it is no mere baseless figment, but that "In forming it, that composite and creative power, in which reason and imagination are

* Lecture on *The Scientific Use of the Imagination*, in *Fragments of Science*. Vol. II.

united, has, we believe, led us into a world not less real than that of the senses, and of which the world of sense itself is the suggestion and, to a great extent, the outcome."

To those who should urge in objection, that although the phenomena occur as if this medium existed, the absolute demonstration of its existence is still wanting, he replies by reminding such objectors, that in the ascertainment of some facts which we all regard as absolutely certain, we cannot go beyond the "as if." What, for instance, is your warrant for believing that any of your fellow-creatures are reasonable? "Simply and solely this: your fellow-creatures behave as if they were reasonable; the hypothesis, for it is nothing more, accounts for the facts. There is no known method of superposition by which any one of us can apply himself intellectually to any other, so as to demonstrate coincidence as regards the possession of reason. As in the case of the æther, beyond the 'as if' you cannot go."

These are but a few out of many instances in

which the pioneers of physical science have been compelled to disregard limitations from which we are constantly assured that the mind of man can never free itself. While Positivists always assume to speak in the name of Science, Science has in reality taken its course in defiance of barriers which they sought to impose upon it—barriers the maintenance of which is essential to the logical consistency of their doctrines.

Before such phrases as, "The limits of experience" can give to Positivists or to Agnostics the slightest assistance in making good their prohibition of all Theology, they must first succeed in so defining experience as to exclude from its field the inferences of what Kant calls the Physico-Theological Argument, while their definition will enable them at the same time to include all the results of science.

That definition of "Experience" which would make it equivalent to actual sensuous perception, would be rejected as too narrow and too strict by every scientific man who understood its bearing on his pursuits; for it would invalidate at

one stroke at least half of the doctrines of science.

Thus Professor Tyndall (speaking, of course, entirely in this interest) says, "Philosophers may be right in affirming that we cannot transcend experience: we can, at all events, carry it a long way from its origin. We can magnify, diminish, qualify, and combine experiences, so as to render them fit for purposes entirely new. In explaining sensible phenomena, we habitually form mental images of the ultra-sensible." * And Lange similarly affirms that "to the sphere of Experience belongs all that is inferred from immediate experience, and in general all that is conceived on the analogy of experience, as for instance the doctrine of Atoms." †

If Science is to accept this phrase as co-extensive with the whole of knowledge, it must include what Geology has to tell of primæval

* *Scientific Use of the Imagination.*

† Zum Gebiete der Erfahrung gehört auch Alles, was aus der unmittelbaren Erfahrung gefolgert, und überhaupt, was nach Analogie der Erfahrung gedacht wird; so Z. B. die Lehre von den Atomen.

oceans, which it peoples in thought with extinct forms of life; as well as the inferences which Astronomy makes about the elements of the stars from the lines of the spectroscope. It must also, unless we are to outrage common sense, include the consciousness of our fellow-men; though that consciousness never has been, and never can be directly perceived by us through any organ of sense; and it must further include the intangible colourless and invisible æther; though this last cannot even in imagination be represented by us under the forms of sense; for by no effort of the imagination can we represent to ourselves any form of matter as being absolutely colourless. And it is important to note that when scientific men anticipate (as Tyndall does) the confirmation of this theory in the future, so that "probability shall grow and strengthen until in the end the malady of doubt is completely extirpated," they do not expect this result to be brought about by the removal of any part of the difficulty that I have spoken of—they have no expectation that the æther will ever be rendered

tangible or visible;—but they anticipate it solely from the accumulation of more evidence of the same kind as that which we have already, solely from our being able to point out more ways in which the hypothesis (the "as if," beyond which he confesses we cannot go,) will harmonize with and explain the phenomena that we see.

Now this is exactly the kind of evidence by means of which the Physico-Theological argument seeks, from the phenomena of nature, to infer the existence of an intelligent Author of nature; and the theoretical objections made to this argument as one which transcends experience, might equally be urged against the other possible objects of knowledge to which I have referred. That this argument has not appeared to men as practically recondite or obscure, is evidenced by the very fact which Positivists so often insist on, *i.e.* that the theological interpretation of nature was the first which presented itself to the human mind; and in addition to this we have seen that we are confronted by the further fact, that in the present day the most diligent investigators of

nature, when they describe what they have observed, sometimes appear to find it impossible to avoid using language which is curiously suggestive of this argument. In discussing the germ theory of disease, Professor Tyndall quotes with approval an argument of Dr. Budd which lays great stress upon a similar use by the most violent opponents of that theory of such terms as "propagation," "self-propagation," and "reproduction," which suggest the theory that they reject. I feel certain that most scientific men, when they could adduce such an argument for their side of any question, would lay great stress upon it as constituting at least a *primâ facie* case calling for further inquiry. That is all which it is necessary for me to claim at this stage of the argument. There are other objections which will have to be considered afterwards; but at present it is enough if I have shown that the road is not barred against our investigation of the subject; and that the veto of those who would thus bar it is not an outcome of the true spirit of science, but rather of a new form of that "despair of men and supposition of impossibility" which

Bacon stigmatized as by far the greatest obstacle to the progress of the sciences and the undertaking new tasks and provinces in the same.*

* Sed longe maximum progressibus scientiarum, et novis pensis ac provinciis in iisdem suscipiendis, obstaculum deprehenditur in desperatione hominum, et suppositione impossibilis.

LECTURE II.

DESIGN AND MECHANICAL CAUSATION.

"*If the Lord will, we shall live, and do this, or that.*—S. James iv. 15.

LECTURE II.

DESIGN AND MECHANICAL CAUSATION.

THE second objection to the Teleological Argument which I propose to consider, is one upon which great stress is placed by the opponents of Natural Theology in the present day. I mean, the objection, that our increased knowledge of the operations of nature has made known to us the existence of a chain of physical or mechanical causation, extending throughout all its departments, which leaves no room for the agency of Design. The progress of science, says Professor Huxley,* "has, in all ages, meant, and now, more than ever, means, the extension of the province of what we call matter and causation, and the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity."

Now, in dealing with the problem which this widely prevalent view of nature forces upon us, it

* Lecture *On the Physical Basis of Life.—Lay Sermons.*

is best to look it at once fully in the face, and to ascertain, if possible, what is the very furthest limit to which the growing province here spoken of can conceivably be extended. It is by this course only that we can effectually refute the often-repeated taunt, that we ever seek to take refuge in "that dark corner which the light of science has not yet reached,"* so that our position is one which must necessarily grow weaker with every extension of knowledge, our reliance being always placed on the fact which will be explained to-morrow, and never on that which was explained yesterday.

Now, the bodies of living creatures so manifestly form part of the physical universe,—from which they derive all their material, and with which they maintain a continual interchange of action and reaction,—that it was not left for modern thinkers to suggest that the reign of mechanical causation must (if it be universal in nature) be extended to the animal world.

It is considerably more that two hundred years since Descartes propounded his celebrated theory

* Lange, *Geschichte des Materialismus.*

of animal automatism. "It appears to me," he says,* "a very remarkable circumstance, that no movement can take place in the bodies of beasts, or even in our own, if these bodies have not in themselves all the organs and instruments by means of which the very same movements would be accomplished in a machine; and further, that by means of this machinery many motions are performed by us without any reflection on our part; as for instance, any one falling from a height involuntarily throws his hands forward without having designed the action; some change having arisen in the brain which produces the motion in the same way as in a machine, and without the mind being able to hinder it; since we observe this in ourselves, why" (he asks) "should we be so much astonished if the light reflected from the body of a wolf into the eye of a sheep has the same power to excite in it the motion of flight?" Following out this idea, he laid down the principle that all the actions of beasts are similar only to

* *Réponse à M. Morus. Works*, ed. Cousin, Paris, 1825, T. X., p. 204.

those which we perform without the help of our minds.

While Descartes reasoned thus, he did not altogether deny consciousness to animals; as he is often asserted to have done. "I must observe," he says,* "that I speak of thought, not of life or of feeling; for I do not deny life to any animal, considering it to consist in the mere warmth of the heart; I do not even refuse them feeling so far as it depends on the organs of the body. Thus my opinion is not so much cruel to animals as it is favourable to men."

Nor does he rigidly exclude the notion of any causal connection between these feelings and the corresponding outward acts. On the contrary, he expressly asserts the existence of this connection, while calling attention to the incapacity of the lower animals to use a real language for the expression of these feelings. "Though," he writes,† "they make us clearly perceive their natural movements of anger, fear, hunger, and other similar feelings, either by voice or by other move-

* *Réponse à M. Morus*, p. 208. † *Ibid.*, p. 207.

ments of the body; nevertheless no one has observed that any animal has arrived at such a degree of perfection as to use a real language."

It was by his successors, the Cartesians (who, as so often has been the case, outran their master), that the rigid system of Automatism was formulated, which taught that animals were mere machines, devoid of consciousness and feeling as well as of thought; a doctrine which sometimes caused cruel results to the unfortunate animals.

In the extension of this theory to the frame of man, it is the rigid system of the later Cartesians which is now generally adopted, so far as regards the causality of the movements of our bodies. Descartes, believing, as he did, that the animal mechanism was designed by the Author of nature, and that the power which works the organism comes from Him, was not so jealous of any modification of his system as those philosophers must necessarily be who maintain that physical causation is the sole and exclusive agency that works in nature, and to whose system therefore a single exception anywhere would be logically fatal.

Accordingly, in the system of Automatism, as it is now presented to us, the notion of any interference with the chain of mechanical causation in the molecules of the human brain, as well as in every other department of nature, is rigidly excluded; and thus the mechanical theory reaches its complete development.

But while the theory has thus been rendered complete so far as regards the causality of our actions, it has been found necessary to make a modification of it in another important respect before it can be made to embrace man as well as the lower animals. However anxious materialistic thinkers may be to banish "spirit and spontaneity" from the universe, it must remain for ever impossible for them to ignore their own thought; and therefore the doctrine, with its present extended scope, instead of an automaton pure and simple, substitutes a *conscious* automaton; it being necessary to recognise in man the existence, not only of feeling, but also of thought and design.

In the obstinate facts of our consciousness which necessitated this change, we have reached a limit

beyond which we cannot be driven, and have landed on solid ground which "the invading waves of Materialism" cannot possibly take from us; and it now remains for us to see whether this absolutely necessary admission of materialists may not involve further important consequences.

As we start then from this point, that no one can deny the existence of consciousness and design in himself at least, the question at once suggests itself, whether the designs which we form have any power to influence the chain of causation which extends on every side of us. The denial of this is represented as a matter of vital importance.

"If we once admit," said the late Professor Clifford,* "that physical causes are not continuous, but that there is some break, then we leave the way open for the doctrine of a Destiny or a Providence outside of us." And in the same article he writes: "The question is, Is there any creation of energy anywhere? Is there any part

* Essay on *Body and Mind*, *Fortnightly Review*, December, 1874, p. 130.

of the physical process which cannot be included within ordinary physical laws? It has been supposed, I say, by some people, as it seems to me merely by a confusion of ideas, that there is, at some part or other of this process, a creation of energy; but there is no reason whatever why we should suppose this. The difficulty in proving a negative in these cases is similar to that in proving a negative about anything which exists on the other side of the moon. It is quite true that I am not absolutely certain that the law of the conservation of energy is exactly true; but there is no more reason why I should suppose a particular exception to occur in the brain than anywhere else. I might just as well assert that whenever anything passes over the Line, when it goes from the north side of the Equator to the south, there is a certain creation of energy, as that there is a creation of energy in the brain."

Professor Clifford, in the passage last quoted, lays great emphasis on the universality of the law of the conservation of energy; but it is important to observe, that if it be possible for our will to

influence our actions without infringing that law, the recognition of this fact will also "leave the way open for the doctrine of a Destiny or a Providence outside of us," a way which the professor was so anxious to keep closed. There are physiologists who hold that mental states are links in the chain of causation, and that between them and the form of nerve force which calls forth motion through the muscular apparatus there exists a correlation like that between light and nerve force.* If this be so, the simplest method of explaining this correlation will be the recognition of their fundamental identity; for the tendency of dynamical science is towards unification, towards the recognition of one original force underlying the varied phenomena of the material world, yet itself unknown. But if force, as known to us in the consciousness of our own mental states, is identical with external force, which is unknown to us except through its results, it will be impossible to dismiss summarily the suggestion, that we ought to explain the unknown

* Cf. Carpenter's *Mental Physiology*, p. 13.

by the known; so that we may have here the true type of that "Infinite and Eternal Energy from which," as Mr. Herbert Spencer admits, "all things proceed." *

In opposition to any such theory of mental links in the chain of physical causation, Professor Clifford maintained that "the physical facts go along by themselves," and that the will cannot influence them. And Professor Bain, in his work on "Mind and Body," writes thus: † "It would be incompatible with everything we know of cerebral action, to suppose that the physical chain ends abruptly in a physical void occupied by an immaterial substance; which immaterial substance, after working alone, imparts its results to the other edge of the physical break, and determines the active response—two shores of the material with an intervening ocean of the immaterial."

At the time when the essay of Professor Clifford on this subject appeared, the same question was

* *Religion: a Retrospect and Prospect*, by Herbert Spencer, *Nineteenth Century*, January, 1884, p. 12.

† *Mind and Body*, by Alexander Bain, LL.D., p. 131.

being warmly debated on the Continent, the discussion having originated from an address delivered by the celebrated physiologist, Du Bois-Reymond, at a scientific conference held at Leipsic in 1872;* an address which excited great interest in scientific and philosophical circles in Germany.

The German physiological school prides itself on its jealous exclusion of any explanation of phenomena which is not purely mechanical,† and in this treatise we have the advantage of seeing this question discussed by an admitted leader in this school; one who admits very unwillingly, and who regards in the light of a defeat, any

* *Über die Grenzen des Naturerkennens, Vortrag gehalten in der zweiten allgemeinen Sitzung der* 45. *Versammlung Deutscher Naturforscher und Aerzte zu Leipsic am* 14. *August* 1872. This treatise and that entitled *Die Sieben Welträthsel*, are now published in one volume, Leipsic, 1884, to which reference is here made.

† "Die deutsche physiologische Schule, längst gewöhnt, in den Organismen nichts zu sehen als eigenartige Mechanismen, wird sich mit dieser Auffassung schwerlich befreunden." *Die Sieben Welträthsel*, S. 98. Du Bois-Reymond is here referring to the theories of Cournot, Boussinesq, and Saint-Venant on the action of the will. An outline of his remarks on this subject will be given later on in this lecture.

failure of the principles of materialism to solve the problems which present themselves to us in the organic world.

The goal of physical science he declares to be the reduction of all changes in the material world to the movements of atoms;* and in illustration of this ideal perfection of physical knowledge he quotes the celebrated statement of Laplace, that a mind which should know at any given moment all the forces which animate nature, and the position of its component parts, and which had the requisite ability to subject these data to analysis, would be able in one and the same formula to comprehend the movements of the greatest bodies in the universe and of the smallest atom; nothing would be uncertain to it, and the future as well as the past would be present to its glance. The human understanding, in the perfection which it has been able to impart to the science of astro-

* *Über die Grenzen des Naturerkennens*, S. 12. "Naturerkennen—genauer gesagt naturwissenschaftliches Erkennen oder Erkennen der Körperwelt mit Hülfe und im Sinne der theoretischen Naturwissenschaft — ist Zurückführen der Veränderungen in der Körperwelt auf Bewegungen von Atomen."

nomy, presents to us a faint image of such a mind." *

"In fact" (he says), "as the astronomer is able to tell by his equations whether when Pericles embarked for Epidaurus there was an eclipse of the sun at Piræus, so the mind which was imagined by Laplace, could, by means of its formula, tell us the name of the man in the iron mask, or the cause of the loss of the *President;* and just as the astronomer predicts the day when a comet, after its journey through the depths of space, will visit our sky again, so that mind could by its equations foretell the day when the Greek cross shall glitter on the dome of St. Sophia, or when England shall burn its last coal. By supposing in the formula of the universe $t = -\infty$, the mystery of the original condition of things would unveil itself to him. He would see matter in infinite space, either in motion already or resting and unequally distributed; since in an equal distribution the equilibrium never could have been destroyed." †

* *Über die Grenzen des Naturerkennens*, S. 14. † *Ibid.*

To such a mind as that which Laplace imagined, Du Bois-Reymond is unwilling to believe that the origination of life from inanimate matter would present an insuperable difficulty. He admits indeed * that now the first origin of life seems veiled in yet deeper darkness than when the hope might be cherished of seeing in the laboratory under the microscope life produced from dead matter. He acknowledges mournfully that, as a result of Pasteur's experiments, this method of production (Heterogeny) † has for a long time, if not for ever, been worsted by the rival method, that of development from seed; and that in cases where it had been believed that life originated, living germs were found to have been there beforehand. Nevertheless, in spite of these adverse experimental results, his faith is strong enough to enable him to believe that the production of protoplasm from dead matter (either in our own world or in some other body in the universe from

* *Die Sieben Welträthsel*, S. 70.

† Better known as Abiogenesis.

which the seeds of life have been wafted to us*) presents nothing more than an exceedingly difficult mechanical problem; and that to a mind which could penetrate all the mechanism of nature, the richest picture of a primeval tropical forest that was ever given to us by St. Pierre, Humboldt, or Poppig, would present no phenomenon other than that of matter in motion.†

In this unattainable ideal of the mind thus imagined by Laplace, Du Bois-Reymond says that we have the highest possible result of the development of the human brain, which (however quick or slow its progress may be) must keep to the type which belongs to it;‡ and therefore, whatever would be limits for it must be barriers which the development of mankind can never surmount.

There are, he says, three such insurmountable

* *Über die Grenzen des Naturerkennens*, S. 25.

† *Ibid.*, S. 27.

‡ "Wie rasch oder langsam auch das menschliche Gehirn fortschreite, es muss innerhalb des gegebenen Typus bleiben, dessen höchstes Erzeugniss das unerreichbare Ideal des Laplace'schen Geistes wäre."—*Die Sieben Welträthsel*, S. 84.

barriers. The first is the impossibility of conceiving the indivisible atoms, from which the universe is to be built up, without falling into contradictions which it is impossible to reconcile. This limit to our knowledge he pronounces to be an absolute one.

The second limit of science consists in the impossibility of accounting for the origin of motion in the matter of which the universe is composed. Laplace's ideal Intelligence would by its formula be able to unveil the original condition of things. But if, travelling back before infinite time, he found matter in infinite space resting and heterogeneously distributed, he could not know whence this heterogeneity arose; or if he found it already in motion, he could not know whence the motion came. In both cases his craving for a cause would remain unsatisfied, unless he could trace back the series of changes to a point in infinite time, in which he could represent matter as resting and homogeneously distributed. But in that case, without supposing a supernatural impulse communicated to matter,

no adequate cause for the first movement can be imagined.* This difficulty also he pronounces to be transcendent.

In the absence of any possible solution of these difficulties, the most perfect knowledge attainable by beings ignorant of the nature of matter and force is described by Du Bois-Reymond as astronomical knowledge; its ideal perfection being such a knowledge of every movement of matter which has ever taken place in infinite space, as an astronomer has of the movements of the planets. To such a knowledge he holds that the origin of life in organic nature could present no insurmountable barrier; but at some period later than that of the origin of life he declares that our knowledge of nature arrives at a chasm over which no bridge, no

* "In Bezug auf die Bewegung fühlt sich daher unser Causalitätsbedürfniss nur dann zu keiner weiteren Forderung veranlasst, wenn wir uns vor unendlicher Zeit die Materie ruhend und im unendlichen Raume gleichmässig vertheilt denken. Da ein supernaturalistischer Anstoss in unsere Begriffswelt nicht passt, fehlt es dann am zureichenden Grunde für die erste Bewegung."—*Die Sieben Welträthsel*, S. 77. See also *Die Grenzen des Naturerkennens*, S. 24.

wing, can carry.* In the presence of Consciousness we stand at the third limit of our knowledge. It is not merely consciousness in its higher forms that he pronounces to be thus incomprehensible. "We do not need to picture to ourselves Watt thinking out his parallelogram, and Shakspeare, Raphael, and Mozart occupied with the most wonderful of their creations, in order to have an instance of an intellectual process which is incapable of being explained by means of its material conditions. . . . With the first feeling of pleasure or pain which some creature of simplest organization experienced at the commencement of animal life on earth; or with the first perception of a quality, that impassable gulf is fixed, and the world has now become doubly incomprehensible." †

"Motion," he says,‡ "can only produce motion, or transform itself into potential energy. Potential energy can only produce motion, maintain statical

* *Über die Grenzen des Naturerkennens*, S. 28.
† *Über die Grenzen des Naturerkennens*, SS. 28, 29.
‡ *Ibid.*, S. 36.

equilibrium, push, or pull. The sum total of energy remains constantly the same. More or less than is determined by this law cannot happen in the material universe; the mechanical cause expends itself entirely in mechanical operations. Thus the intellectual occurrences which accompany the material occurrences in the brain are without an adequate cause as contemplated by our understanding. They stand outside the law of causality, and therefore are as incomprehensible as a *mobile perpetuum* would be."

Du Bois-Reymond warns his readers against confounding the proposition, "Consciousness is bound up with material conditions," with the totally distinct proposition, "Consciousness can be mechanically explained."

It would be (he says) a lofty triumph, if we were able to say that when a particular thought arises there takes place at the same time a particular movement of particular molecules in particular ganglia or nerve fibres; if we knew what movements of atoms of carbon, hydrogen, nitrogen, oxygen, phosphorus, and other kinds, corres-

pond to the enjoyment of a fine piece of music, and what a molecular storm represents acute pain; but even if we could discern the movements of these molecules as clearly as an astronomer discerns the movements of the planets, the mental facts themselves would be as incomprehensible as ever. This perfect mechanical knowledge of the brain would reveal nothing but matter in motion; and there is no conceivable community of nature between matter in motion and such a mental fact as is expressed in the sentence, "I feel pain," or "I feel pleasure," "I hear music," or "I see colour," or with the certainty that "I exist". which directly results. *

"Though," he says in another place,† "we possessed astronomical knowledge of what takes place in the brain, yet we should not have advanced a hair's breadth in respect of the origin of consciousness. Even the spirit imagined by Laplace, so immeasurably surpassing but resembling our spirit, would, though in possession of its 'World

* *Über die Grenzen des Naturerkennens*, SS. 36, 37.

† *Die Sieben Welträthsel*, S. 69.

Formula,' be no cleverer in this matter than we are."

Thus thought, whenever and wherever it occurs, is pronounced to be an insoluble enigma, an impenetrable barrier limiting physical science. A brain in a dreamless sleep, surveyed by such an intelligence as he was speaking of, would, he says, no longer contain any secret; the whole human machine could be analysed, with its breathing, its beating heart, its chemical changes, its warmth. The dreamless sleeper is comprehensible, just as the world was before there was consciousness. But the moment a dream-picture begins to dawn on the sleeper's mind, he becomes incomprehensible again; just as the world became doubly incomprehensible on the first movement of consciousness.

In Du Bois-Reymond's other treatise on the *Seven Enigmas of the Universe*, these three limits to knowledge appear, of course, amongst the Enigmas; but they are there associated with four other enigmas, which that author hopes a more perfect knowledge would be able to solve. Among

these is the origin of life, which has been already spoken of; but some of the others have an important bearing upon our subject.*

Fourth among these Enigmas he places the appearance of Design in nature. For a solution of this difficulty he looks hopefully to Darwin's doctrine of Development by means of Natural Selection. He describes his feeling towards this doctrine as being the very same with which a man would regard the plank to which he had clung, and which held him up on the surface of the ocean, beneath whose waters he must otherwise have sunk without hope of rescue. "When" (he says) "the choice is between the plank and destruction, the advantage is on the side of the plank."†

* The following is the order in which Du Bois-Reymond marshals his enigmas. I have marked with a * those which he regards as transcendent or insoluble.

1. *The Existence of Matter and Force.
2. *The Origin of Motion.
3. The Origin of Life.
4. The Appearance of Design in Nature.
5. *The Existence of Consciousness.
6. Intelligent Thought and the Origin of Speech.
7. The Question of Freewill.

† *Die Sieben Welträthsel*, SS. 78, 79.

In a later edition he says that this metaphor of his caused such joy in what he calls the opposite camp, that some of the writers on that side changed his plank into a straw. But he reminds them that there is a fundamental difference between the metaphors; for a straw never yet saved any man from drowning, while a plank of sufficient size has saved many a life.

The sixth Enigma is the existence of reason and of language. The necessity of recognising the incomprehensible nature of this problem follows from the recognition of the incomprehensible nature of the simplest sensation, by an *argumentum à fortiori*. *

The seventh and last Enigma is the question of Freewill. After a somewhat contemptuous description of the form in which this problem presented itself "during the ages when men's minds were darkened by theological madness," Du Bois-Rey-

* "Ich legte auf die mechanische Unbegreiflichkeit auch der einfachsten Sinnesempfindung nur deshalb so grosses Gewicht, weil daraus die Unbegreiflichkeit aller höheren geistigen Processe erst recht, durch ein *Argumentum à fortiori* folgt." *Die Sieben Welträthsel*, S. 70.

mond says: "In what a totally different manner does our age represent to itself the problem of the freedom of the will. * The Conservation of Energy means, that force can never come into being, or perish, any more than matter can. The condition of the whole world and of each human brain in it every moment, is the absolute mechanical result of its condition in the previous moment, and the absolute mechanical cause of its condition in the following moment. That in any given moment one or other of two things may take place, is an unthinkable proposition. The molecules of the brain, as surely as the dice on leaving their box, must always fall in the way determined for them. If one molecule were without adequate cause to swerve from its position or from its path, it would be a miracle as great as if Jupiter were to break away from his ellipse and throw the whole planetary system into confusion. If, now, in accordance with the Monistic doctrine, our ideas and efforts, as well as our voluntary actions, are simply phenomena, which incompre-

* *Die Sieben Welträthsel*, S. 88.

hensibly, but necessarily and with but one meaning, accompany the movements and collocations of the molecules of our brains, it is clear that there is no freedom of the will. To Monism the world is a mechanism, and in a mechanism the freedom of the will can find no place."

The enigma here consists in the fact, that in the midst of this system of mechanism we appear to ourselves to be conscious of the power to direct our own actions on many occasions. So long as we keep to the physical sphere, Du Bois-Reymond considers that the enigma may be solved without much difficulty by explaining away our subjective feeling of freedom as an illusion; but for most natures the darkness of the enigma becomes manifest so soon as we move from the physical sphere to the moral. "Men readily grant" (he says) "that they are not free, but merely as it were tools moved by hidden causes, so long as the action is indifferent. Whether Cæsar decides to begin by putting on his right or left shoe is immaterial; in either case he comes forth booted from his pavilion. But the course of the history

of the world depends on whether he crosses the Rubicon or no. So little are we free in certain small determinations, that one who has a knowledge of human nature can predict with surprising accuracy which card we will take up of several which have been placed before us under certain circumstances. But the most resolute Monist, confronted by the stern demands of morality, can only with difficulty hold fast the conception that the whole existence of mankind is nothing but a *fable convenue*, in which mechanical necessity allots to Caius the part of a criminal, and to Sempronius that of a judge; and therefore Caius is led to the place of execution while Sempronius goes to breakfast."

Du Bois-Reymond rejects the solution proposed by some French mathematicians, who would reconcile the action of the will with the conservation of energy by the supposition that under certain circumstances there may be a possibility of altering and guiding the direction taken by pre-existing forces without any expenditure of energy on the part of the guiding

principle. Amongst other criticisms, he asserts that they confuse the proposition that the force which lets loose the stored-up energy may be infinitely small, with the proposition that it can be actually *nil.* "The force expended in the stroke of a crow's wing, which, as it flies through the air, causes a vibration that starts an avalanche on the mountain side, seems to be nothing when compared with the masses of snow sweeping down with resistless might into the valley; that is, we may neglect the former force in estimating the latter, because it does not bear to it any proportion which we can express in figures; and also because it is far within the limits of the errors which must be made by the observer. But, however insignificant the beating of the wing may appear, regarded from the valley, near the destroying might of the avalanche; yet in the air where the bird is flying, each stroke expends an energy to which there corresponds a definite weight raised a definite height." Without the expenditure of force, Du Bois-Reymond therefore holds, there can be no guidance of force;

and accordingly he considers it necessary to maintain that nothing which is mental can produce material changes.

Now, in reviewing the enigmas here marshalled before us, I would first observe as to their order, that the impossibility of explaining the existence of consciousness is ranked as the last of the three limits of knowledge, and as the fifth amongst the seven enigmas. The knowledge of the world possessed by the mighty Intelligence of which he has been speaking, was represented as developing without further check when once certain fundamental difficulties had been left behind, till the moment when consciousness appeared as something before unheard-of,* a new source of perplexity in a universe which was beginning to be comprehensible without it; and from the moment of its appearance the world became doubly incomprehensible.

Now, if we are to represent to ourselves this Intelligence as really marshalling his difficulties in this time order, we must suppose him to have

* "Etwas Neues, bis dahin Unerhörtes."—S. 28.

committed the gigantic blunder of overlooking his own consciousness. Before consciousness, and outside consciousness, there can be no knowledge; and this undeniable fact may well suggest to us that the relation of Consciousness to the other problems of the universe may be a more fundamental one than that assigned to it by Du Bois-Reymond.

But further, whilst the writer deduces from his survey the conclusion that under and beyond the province of matter and physical causation we are confronted by mysteries which impose upon us the condition of hopeless doubt and bewilderment commonly associated with the name of the Greek philosopher Pyrrho; it is impossible to hide from our eyes the fact that those mysteries all seem to point in one direction with greater or less clearness; and that if this direction is one which can be followed by us, some of them will cease to be sources of perplexity. This is certainly the case with regard to the fourth of the enigmas, the appearance of design in Nature. If Du Bois-Rey-

mond, in presence of this characteristic of nature, described himself as a shipwrecked sailor clinging to a plank that he might save himself from utter destruction, it was certainly not because of the impossibility of drawing any conclusion from this appearance of design, but because it seemed only too easy to draw one particular conclusion; so that, but for the plank of Natural Selection, he would not have known where to seek an argument to enable him to resist the inference that nature has had an Intelligent Author.

The second limit of knowledge, the impossibility of accounting for the first origin of motion in a homogeneous universe without the communication of a supernatural impulse, seems to point in the same direction. Mr. Herbert Spencer felt this so strongly, that he devoted a long chapter in his work on *First Principles* * to an attempt to prove that the homogeneous would be unstable, so that motion could arise in it without any further cause; but the *ignoratio*

* Chapter xix., "The Instability of the Homogeneous."

elenchi which runs throughout the whole chapter, reveals the desperate nature of the attempt. For it is not the case of a homogeneous universe which he there considers, but that of a limited homogeneous system surrounded by heterogeneous elements outside it—in other words, a heterogeneous universe. This he proves convincingly to be unstable, a conclusion which every one would readily have admitted without proof. It is to a homogeneous distribution of motionless matter in infinite space that Du Bois-Reymond shows that the scientific mind in its highest ideal development could not rest satisfied till it had traced back the long series of changes.

In one sentence in his introduction Du Bois-Reymond shows that he has not failed to observe that the Pyrrhonism which he recommends, is not the only conclusion which may be drawn from a consideration of the enigmas which he examines in the body of the work. Many, he says, do not like the Pyrrhonism in a new dress to which the philosophy of nature inevitably leads. "Let them try then the only

other way out, the way of Supernaturalism. Only let them mark, that where Supernaturalism begins Science ends." *

In whatever sense it may be true, that where supernaturalism begins science ends, it is certain that it ends absolutely and entirely where Pyrrhonism begins. Pyrrhonism indeed is not "a way out" at all, but a labyrinth without an exit.

But further, this assertion (even supposing it to be true) cannot constitute a valid reason for declining to examine the evidence for the supernatural alternative, for Du Bois-Reymond has himself shown that there is equal reason for asserting that where human consciousness begins science ends ; and yet, though he regards this as an absolute limit to physical science, he is obliged to admit its existence to be a fact which cannot be denied or explained away.

* "Der Pyrrhonismus in neuem Gewande, auf den sie unaus weichlich hinausführt, sagt Vielen nicht zu. Mögen sie es doch mit dem einzigen anderen Ausweg versuchen, dem des Supernaturalismus. Nur dass wo Supernaturalismus anfangt, Wissenschaft aufhört."

The first of these treatises of Du Bois-Reymond was, as has been already stated, originally delivered as an address at a gathering of natural philosophers and physiologists from all parts of Germany, and was favourably received at the time; but on its publication, a little later, it was attacked by a large section of the German materialists with a warmth which showed that in their opinion it contained an admission dangerous to their cause. The pronounced materialism of the greater part of it, and its strong assertion of Atheism could not atone for the fact that Du Bois-Reymond had lent his high authority as a physiologist to the statement that consciousness not only cannot now be explained out of mechanism, but never can be so explained—that he had written not only "Ignoramus," but "Ignorabimus." * For this he was denounced as one of "the black gang," and

* "Gegenüber dem Räthsel aber, was Materie und Kraft seien, und wie sie zu denken vermögen, muss er ein für allemal zu dem viel schwerer abzugebenden Wahrspruch sich entschliessen: 'Ignorabimus.'"—*Über die Grenzen des Naturerkennens*, S. 46.

was assailed with such bitterness that he was goaded into the retort, that they "demonstrated anew how close to Despotism extreme Radicalism dwells."* But it was easier to denounce, than to find a way of escape from the dilemma of Pyrrhonism or Supernaturalism with which he had confronted them.

A "way out" did indeed appear to some of these writers to present itself in the absolute identification of our sensations and ideas with the movements of the molecules of the brain; they would thus (it was hoped) be represented as purely physical changes, so that there could no longer be any difficulty in regarding them as effects of purely physical causes; nothing would be left in the universe but matter and the movements of matter, and the problem of the origin of the immaterial would be solved by its disappearance.

This "way out," however, is one which leads

* "Fanatiker dieser Richtung, die es besser wissen konnten, denuncirten mich als zur schwarzen Bande gehörig, und zeigten auf's Neue, wie nah bei einander Despotismus und äusserster Radicalismus wohnen."—*Die Sieben Welträthsel*, S. 66.

into a region of a totally different character from that desired by those who advocated it. The absolute identification of ideas with matter or the motions of matter, logically and necessarily has its issue, not in Materialism, but in Idealism. Knowledge is a psychological, not a physical fact; and the sensations and perceptions which are generally represented as its material, the reflection which deals with them and the ideas which thence arise, are all facts of consciousness. Now, the opponents of Idealism (amongst whom materialists are of course included) have always contended that matter is something altogether different in kind from our ideas. Those of them who are materialists may indeed hold that material changes are the sole causes of our ideas and sensations; but they are generally careful to teach at the same time that the material changes themselves have no community of nature with the sensations and ideas which they cause in us. The doctrine held on this subject by the school whose claim to speak on behalf of physical science is most generally ad-

mitted, is, that our ideas are merely symbols, which cannot resemble the matter which they symbolize. "Our sensations" (writes Helmholtz)* "are for us only symbols of the objects of the external world, and correspond to them only in some such way as written characters or articulate words to the things which they denote. They give us, it is true, information respecting the properties of things without us, but no better information than we give a blind man about colour by verbal description." Similarly, Mr. Herbert Spencer writes,† "No relation in consciousness can resemble or be in any way akin to its source beyond consciousness."

The doctrine of Idealism, as propounded by Bishop Berkeley, denies any such "twofold existence of the objects of sense."‡ The "symbols" he declares to be the realities, and the unknown objects which have "no resemblance" to them, though they are symbolized by them, he dismisses

* *Lecture on Goethe's Scientific Researches.*—Helmholtz.

† Spencer's *Principles of Psychology*, vol. II. § 472.

‡ *A Treatise of the Principles of Human Knowledge.* Works (Fraser's ed.), vol. I. p. 200.

as mere inventions of philosophers. In his third "Dialogue between Hylas and Philonous" he sums up his teaching on this subject by saying that he agrees with the vulgar in their opinion "that those things they immediately perceive are the real things," and with the philosophers in thinking "that the things immediately perceived are ideas which exist only in the mind."

It is generally admitted that some of the arguments urged by Berkeley in support of this conclusion cannot be refuted by reasoning;* and his philosophical opponents are thus obliged to rely on the necessity, of which we appear to ourselves to be conscious, for assuming as

* Mr. Herbert Spencer, in the laboured refutation of Idealism into which he enters in the second volume of his Psychology, becomes quite warm in his denunciations of the tyranny of Reason as displayed in this controversy. "Reasoning," he says, "has come to excite an amount of faith greatly in excess of that which is its due." There "has arisen an awe of Reason which betrays many into the error of supposing its range to be unlimited." "By extinguishing other superstitions, Reason makes itself the final object of superstition." And describing the debate as a "Trial of Reason *versus* Perception," he declares that the claim of Reason to superior trustworthiness is one which cannot possibly be justified.—*Principles of Psychology*, Part vii., chapter ii.

the cause of our sensations and ideas a material substance totally differing from them in its nature. Now, the theory of extreme materialism, if true, would show that there is no necessity for making any such assumption. For, by declaring the identity of mental processes with certain material processes; it is logically obliged to admit that these same material processes are identical with mental processes. If ideas are motions of matter, the converse statement can no longer be resisted, that these same motions of matter are ideas. And if science is right in its belief that all motions of matter are alike manifestations of one and the same force, which appears to us under different disguises, then must all the movements of matter be of the nature of ideas. But this is pure Idealism. Thus, of any theory which regards ideas as identical with the processes of matter, the result is, that the ideas remain while the matter disappears.

Haeckel (whose hostility to Theism is so marked a feature in his scientific works) joined

in the controversy caused by the publication of Du Bois-Reymond's treatise, and proposed the following postulate in aid of a solution of the problem of the origin of consciousness. "Each atom (he writes)* has inherent in it a certain quantity of force, and is in this sense endowed with a soul. Without the assumption of an atom-soul the commonest and most ordinary phenomena of chemistry are inexplicable. Pleasure and pain, desire and aversion, attraction and repulsion must be shared by all the atomic masses; for the movements of the atoms, which must take place in the formation and dissolution of chemical compounds, can only be explained by attributing to them sensation and will."

Haeckel had accused Du Bois-Reymond of Jesuitism† for asserting that it never will be

* Ernst Haeckel, *Die Perigenesis der Plastidule oder die Wellenzeugung der Lebenstheilchen. Ein Versuch zur mechanischen Erklärung der elementaren Lebensvorgänge.* Berlin, 1876. SS. 38, 39.

† This epithet would appear to be a favourite one with some German materialists as a description of opinions of which they disapprove. Du Bois-Reymond himself applies it to those who ventured to advocate the cause of Christianity in this contro-

possible to explain the origin of consciousness mechanically; and the latter retorted with much force by asking, why Haeckel should consider it Jesuitical to deny the possibility of explaining consciousness by the arrangement and movement of atoms, when he himself is so far from attempting to explain it in this way that he assumes it as an attribute of the atoms incapable of further analysis. He accuses him of sinning against the first rule of philosophy, *Entia non sunt creanda sine necessitate;* "for what is the use of consciousness if mechanics are sufficient? And if atoms have sensation, what is the use of organs of sense?" And he reminds him that these countless atom-souls do not help us to explain the unitary consciousness of the brain.

It is strange that Haeckel should have persuaded himself that he was erecting a barrier

versy. In the Preface to his sixth edition he writes thus:—"Zu Naturforschern und Philosophen gesellten sich sogar, um meine Aufstellunzen anzugreifen, mit offenem Visir Kämpfend katholische, mit geschlossenem, jedoch leicht kenntlich, protestantische Jesuiten."

against supernaturalism by propounding this theory. It concedes the possibility of the action of will on nature; and it pronounces this causal action of will to be the only possible explanation of the attraction and repulsion of atoms, and of the molecular movements which are investigated by chemistry. Now, modern physical science regards all the phenomena of matter as capable of being resolved into these fundamental movements of the atoms. The necessary development of this theory would therefore be the recognition of will as the original cause and explanation of all material phenomena. But, as this multiplicity of wills would not in the least help to explain the unity and order of nature, these characteristics would also demand an explanation; and the previous recognition of Will as the only cause which can account for motion would involve our seeking in the same direction an explanation of the order and unity apparent in the motions of the universe as a whole. This would afford a basis as broad as the universe for the analogical argu-

ment which infers one Intelligent Will as the original cause of the universal Cosmos.

Du Bois-Reymond, on the other hand (as we have seen), strenuously denied the possibility of any action of will upon matter; and was therefore in this respect far more materialistic than Haeckel. While admitting the first origin of motion to be mechanically inexplicable, he refused to entertain the thought of the possibility of its having been caused by Will, preferring rather to take refuge in Pyrrhonism. Having thus resolved to dismiss as insoluble the question of the origin of force or motion, he henceforth regards its continued transmission and all its transformations as being purely mechanical, and denies that it is possible for will or design to move the smallest particle of matter, or to alter its course in the slightest. Having practically laid down the principle that where consciousness begins science ends, he considered it necessary, in order to preserve a field for science, to exclude altogether the interference of any form of consciousness with the

material universe. And (like Clifford and other leaders of the same school of thought) he saw clearly that one single case of such interference admitted anywhere would establish the principle that it does possess this power. "If," wrote Dr. Lange, commenting on this controversy in his *History of Materialism*,* "a single cerebral atom could be moved by a thought the millionth part of a millimetre out of the path which it must pursue according to the laws of mechanics, the whole world-formula would cease to apply, and would no longer have any meaning. The actions of mankind, however, even those, for instance, of the soldiers destined to plant the cross upon the mosque of Sophia, of their generals, of the diplomatists who shall have a share in bringing it about, and so on—all these actions, considered from the standpoint of natural science, do not result from 'thoughts' at all, but from movements of the muscles, whether these serve to make a march, to draw a sword or guide a pen, to pronounce a word

* Lange: *Geschichte des Materialismus.*—Buch ii. S. 155.

of command or to fix the glance upon the point of assault. The muscular movements are set free by means of nervous activity; this is produced by the functions of the brain, and these are completely determined by the structure of the brain, by the sensory conductors, by the atomic movements of molecular changes, and so forth, under the guiding influence of the centripetal nervous activity. We must clearly understand that the law of the conservation of energy can undergo no exception in the interior of the brain without becoming wholly meaningless; and we must therefore raise ourselves to the conclusion, that all the acts and movements of mankind, of individual persons as well as of nations, might go on exactly as they do now, though nothing resembling a thought or sensation were to occur in any one of these individuals."

We have, I think, now before us a distinct outline of the territory which some of the ablest opponents of Theism, who profess to speak in the name of physical science, claim for "the growing

province of matter and causation;" and we may discern the extent to which they hope to carry "the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity." It is well to notice carefully in what way the theory thus propounded must, if true, affect our belief about the agency of God and the agency of the mind of man. For the latter, the agency of the human mind, it leaves no room whatsoever. It tells us that in attributing the railways and steamships and cotton-mills of the present day to the fertile mind of man, we have been making a mistake as great as that of the insane astronomer in Swift's satire, who had persuaded himself that it was his watchful care which guided the movements of the planets. The railways, steamships, and cotton-mills would have been constructed all the same, though we had no minds at all, just as the stars would have remained in their proper places though the attention of the astronomer had been withdrawn from them. It was the boast of Comte, that to minds familiarised with the true astronomical philosophy, the heavens

now declare no other glory than that of Hipparchus, Kepler, Newton, and all those who have contributed to the ascertainment of their laws; but if the doctrine of Automatism be true, it is the direct contrary of this which results; it is the glory of Hipparchus, Newton, and Kepler which is irretrievably destroyed. For the mind of Hipparchus was not the agent which made known to man the Precession of the Equinoxes; nor were the thoughts of Newton the cause of the writing of the *Principia;* nor did those of Kepler cause the enunciation, either by pen or voice, of the laws which bear his name. These philosophers were merely conscious automata; and had they been unconscious automata, the result would still have been the very same. But while this doctrine absolutely excludes the mind of man from exercising any influence on nature, it does not at all exclude the possibility that this whole vast mechanism, including alike the works of nature and what we have hitherto been accustomed to call the works of man,—this chain of physical causation which stretches through the ages,—may

have been designed and caused by Divine Will at the beginning. Man, being in the midst of the chain, and surrounded by it on every side, cannot break through its links; but its existence can furnish no direct proof excluding the possibility of Divine agency having shaped this chain at the first. Indirectly, however, it would affect our proofs of that agency by destroying the argument drawn from the analogy of our own.

Now, before we inquire whether any direct evidence can be brought against the theory which asserts that Man is a conscious automaton, we may, I think, throw a side light upon it by contrasting it with the theory held by Leibnitz. That philosopher believed as firmly as Du Bois-Reymond or Lange that the chain of physical causation is not influenced by the human mind; but he also held that the chain of mental causation is equally unaffected by matter; that the two series are independent of each other, though they correspond to each other. This correspondence he explained as a harmony pre-established by the Creator of both; and he

compared the two parallel series to two unconnected clocks so constructed that at the same instant one should strike the hour and the other point it.

The materialistic doctrine of automatism differs from that of Leibnitz in that it drops the notion of a pre-established harmony, and regards the material series as independent, but the mental as dependent.

Now, if this part of Leibnitz's theory had been adopted by him solely from theological or metaphysical prejudice, it might no doubt without difficulty be thus dismissed, leaving the remaining part of the theory as harmonious and as logically consistent as before. But, inasmuch as his reason for putting it forward was the necessity of taking into account facts of consciousness which, as we have seen, can neither be denied nor ignored, it is not so easy to drop this part of his theory and at the same time retain the other portion intact. For if the physical series be the cause of the mental, but the mental series can never in its turn be the cause of the physical, we have action

without reaction; so that the theory of Leibnitz, paradoxical as it appears, agrees much better with the doctrine of the Conservation of Energy than this modern development of it can possibly do.

And this will be made clearer by an illustration framed by Professor Huxley for the very purpose of recommending this modern doctrine of automatism. He compares the consciousness of brutes to a steam whistle, which has no effect upon the working of the machinery of the engine; and our own consciousness to the sound which the bell of a church gives out when it is struck.* Now, a moment's reflection will show that the sound of the bell and that of the whistle have so much influence on the working of their respective machines that they subtract a small portion of the energy available for working them; and that the energy so subtracted, though it may not further influence the machine, does influence the physical world outside the machine; no part of it is lost; it becomes a link in the chain of physical causation,

* *The Hypothesis that Animals are Automata*, by Professor Huxley.—*Fortnightly Review*, November, 1874, pp. 575, 576.

so that the whole transaction harmonises with the doctrine of the Conservation of Energy. But the doctrine of automatism teaches that our consciousness is not a link in the chain of causation at all, and can produce no effects either within or outside the bodily frame with which it is supposed to be connected. The mental series consists of consequents which can never in their turn become antecedents, for not only are they prohibited from exercising any influence on the physical series, but, as it would appear, even upon their own series. For the mental changes of each moment are represented as being merely accompaniments of the physical changes of the same moment, and as entirely determined by them, whilst these in their turn are entirely determined by the situation of things which preceded them in the chain of material causation.

It appears to be generally assumed by writers who advocate this doctrine, that, in order to establish it, they have only to inquire what is the evidence for the existence of a chain of causation in the physical series, and then to show that it

appears to be connected with the mental phenomena; thus Lange says: "The absolute dependence of the intellectual on the physical must be asserted so soon as it is shown on the one hand that the two sets of phenomena entirely correspond, and, on the other, that the physical events follow strict and immutable laws which are merely an expression of the functions of matter." He seems to have thought it unnecessary to ask whether there may not possibly be direct evidence on the other side, evidence the tendency of which is to show that our designs must be recognised as causes or antecedents whatever may be the difficulty of explaining the fact when recognised. To omit asking this question, is to hear evidence on one side only. We have therefore to inquire: Have we as cogent evidence for a succession of cause and effect, or antecedent and consequent, in the mental series as we have in the physical?

Now, as regards the succession in the physical series, it was remarked by Hume, that no physical object ever discovers by the qualities which appear to the senses, the effects which will arise from it,

so that, without experience it is impossible for us to carry our foresight beyond the object to its effect. "Even after one instance or experiment, where we have observed a particular event to follow upon another, we are not entitled to form a general rule, or foretell what will happen in like cases; it being justly esteemed an unpardonable temerity to judge of the whole course of nature from one single experiment, however accurate or certain." * "All events" (he wrote a little earlier in the same essay) "seem entirely loose and separate. One event follows another; but we can never observe any tie between them." Hence, when we speak of cause and effect, what we really see are only antecedents and consequents, while it is custom alone which makes us regard any two phenomena as standing in this relation, or induces us on seeing the one to expect the appearance of the other. The facts to which Hume thus called attention are so obvious that in the physical region no one disputes his conclusion; and it has become an accepted doc-

* Hume, on *The Idea of Necessary Connection.*

trine with what is called the Empirical School of philosophy, that cause and effect mean only antecedent and consequent. Sometimes, indeed, the adjective "invariable" is added by them; but, as they have already rejected the idea of necessary connection, this phrase can only mean, that the succession has been unvaried so far as experience has gone.

Now let us turn to the mental series. A great painter designs an original picture; he will draw a group of figures or a landscape that his eye has never seen; and as he designs it he anticipates that in due time there will come to him through the sense of sight the perception of the realisation of his design. Similarly, a great composer can anticipate from the mental antecedent alone what the music will be like when it is played and heard.* There must plainly be a likeness between

* It may be objected that this is not the immediate consequent, that the design is only the cause of what is written down, and that the score in turn is the cause of the performance which produces a result in the mind of the audience. In estimating the force of this objection we must carefully avoid confusing the mental and the physical series. If it be the immediate consequent in the physical series that is meant, the score of the music has no

the antecedent and consequent in these cases, the absence of which in the physical series was one of the points to which Hume called attention, as proving that all events are quite loose and separate. And it is not men of genius only who possess this power of prediction. We all have it. It is its universality which conceals from us how wonderful it is. Hour by hour, and minute by minute, we look forward to making movements and performing actions; and the result confirms our expectation. The whole business of life depends on this power of prediction; without it no one could keep an appointment or discharge an obligation.

Now, if we could conceive it possible for

title to rank as the consequent; for not only movements in muscles and in nerves, but also a long series of molecular movements in the brain have already intervened before the score is commenced. But the effect or consequent in the mental series aimed at by the composer certainly cannot be said to be these molecular movements. The object of the composer is the communication of his idea. This is not completely effected till the music is heard; and when it is effected, the likeness of the effect to the cause becomes apparent. The argument in the text insists upon this likeness as a proof that the idea is really communicated, and consequently that the purpose of the designer is really effected.

science to give us such a knowledge of the molecules of the brain that we should be able to infer from their condition what we should do a minute afterwards (not to speak of a year afterwards) it would be regarded, and justly regarded, as a most important confirmation of the connection of physical antecedents and consequents. But this power of foreseeing the future is already given us through our knowledge of the mental series. The power of prevision Comte declares to be the great object and test of science. Its task, according to him, is to see in order to foresee. At the same time he rejects psychology because it is barren of results. Yet, if the power of which I speak could only have been gained for us by some keen-sighted discoverer, some psychological Newton, he would not only have taken rank among the greatest benefactors of the human race, but he would also have established the claim of psychology to be a science, and one of the most useful of sciences. Surely a method is not less valuable because it yields results without effort, and yields them to every one.

But we are reminded that our will is frequently baffled, our predictions fail, we make promises and are unable to perform them. How then can the will be an invariable antecedent? Does not St. James warn us not to predict the future with confidence, and tell us, "Ye know not what shall be on the morrow"? Certainly he does. But what is this but reminding us that we are not omnipotent and are not independent of circumstances? And is any physical antecedent which is known to us omnipotent or independent of circumstances? Du Bois-Reymond, in a passage which I have already quoted, speaks of astronomers as calculating the day when a comet will return to our sky from the depths of space; but we all know that there is some rhetorical exaggeration in this. No astronomer would feel confidence in predicting the very day of the return of a distant comet; for he knows not what accidents may befall it in its journey through space, and retard its appearance, or even cause it to return no more. But this is no reproach to astronomical science. Astronomers are quite

content to predict the future with a conditional certainty, making allowance for unexpected accidents. And in other branches of science this element of uncertainty is much more serious. Just so, we know not what shall be on the morrow; but daily and hourly experience tells us that we are able to say with a conditional certainty, "If the Lord will, we shall live and do this or that." We count that an antecedent is invariable if it is always followed by the expected consequent, provided that there is no obstacle and provided that the requisite conditions are present. There is no physical pair consisting of antecedent and consequent which is invariable in any other sense than this; and in this sense our will is an invariable antecedent.*

* If it be objected that, if all the circumstances which constitute the physical situation were known and taken account of, we should obtain an antecedent whose consequent we could infallibly predict; my answer is, that such an objection uses the word antecedent in a totally different sense from that in which it is used when writers speak of having observed the same antecedent to be invariably followed by the same consequent. This antecedent is constituted by all the unknown as well as known circumstances in the universe which can possibly influence the appearance of the conse-

Hume's criticism on Berkeley was, that "all his arguments admit of no answer, and produce no conviction. Their only effect is to cause that

quent, therefore our want of knowledge forbids us to assume that all these circumstances must be of a purely physical nature. And let us ask, further, how do we know that this antecedent has a necessary relation to any particular consequent? It is by no means certain that, taking this meaning of the word antecedent, the same antecedent has ever occurred twice in all the universe. Certainly no one has ever been in a position to observe its repetition; so that anything which we may believe about it cannot be derived from our past experience of it. The argument in the text aims at proving that, taking the antecedents and consequents which we have observed and not those which we have not observed, we have stronger proof that our designs are invariable antecedents than we have about the physical antecedents which come within our observation. The objection which we are now considering is not based upon observation alone. The hypothesis from which it starts is obtained by discriminating between our observations, reasoning back from the consequent to the antecedent, and concluding that, because the consequent is different, the antecedent cannot really have been the same. This method of reasoning would be quite illegitimate on the assumption that all events are quite loose and separate, and that habit alone leads us to imagine that there is any connection between them; it can only be justified by assuming the truth of the dynamical theory of causation. Now our belief in dynamical causation is confessedly derived from the consciousness which we have of the agency of our will, so that it would appear that our trust in the truth of this affirmation of our consciousness lies at the very foundation of the argument which is constructed to overthrow it.

momentary amazement and irresolution and confusion, which is the result of scepticism." *

The absolute truth of this criticism is disproved by the existence of Idealists; but there can be little doubt that it describes the mental attitude of many persons towards Idealism. This is not solely caused by its appearing to most people to contradict the verdict of their consciousness; but still more, I believe, by its being generally regarded as at variance with the instincts of Physical Science. In vain do Idealists plead that their doctrine only denies a transcendental inference, and does not interfere with the subject-matter of Science. Physical Science is felt to have conferred such benefits upon mankind, and to have so widely extended our knowledge of the universe, that in every succeeding generation

* Vol. II. of Hume's Essays, Note on Section XII. *Of the Academical or Sceptical Philosophy.* Byron's comment on Berkeley is well known.

"When Bishop Berkeley said 'there was no matter,'
And proved it—'twas no matter what he said.
They say his system 'tis in vain to batter,
Too subtle for the airiest human head;
And yet—who can believe it?"

an increasing number of persons feel impatient of any theory which appears in any way to come into collision with it, or to deny what it seems necessary for it to assume. Materialism, on the other hand, notwithstanding its logical difficulties, is regarded by many scientific men as being specially favourable to their pursuits, and is, consequently, looked upon as a creed eminently suited for practical men.

Before, however, we can regard in this light Materialism, with the doctrine of Automatism which forms an essential part of it, we must have forgotten that it is by mind that the discoveries of Physical Science have been made, and by effort that it has been advanced.

In one of his *Lay Sermons*, Professor Huxley describes in his own vivid and impressive way the first beginning of the Royal Society. He tells us how a few calm and thoughtful students, who used to meet in one another's lodgings, banded themselves together more than two hundred years ago for the purpose of improving natural knowledge; and he relates how out of

their "grain of mustard seed" a tree has grown which would dazzle the eyes of Vesalius and of Harvey.

"If," he says, "the noble first President of the Royal Society could revisit the upper air," . . . "he would need no long reflection to discover that all these great ships, these railways, these telegraphs, these factories, these printing presses, without which the whole fabric of modern English society would collapse into a mass of stagnant and starving pauperism,—that all these pillars of our State are but the ripples and the bubbles upon the surface of that great spiritual stream, the springs of which, only, he and his fellows were privileged to see; and, seeing, to recognise as that which it behoved them above all things to keep pure and undefiled."

No two doctrines could be more completely at variance in their spirit and tendency, than that which pervades this whole address, in which Professor Huxley reiterates again and again, that it is "the improvement of natural knowledge" which is the cause of all the achievements of

the nineteenth century; that the spinning jenny and the steam-pump and the lighting and draining of our cities are the "expression in practical life" of "this marvellous intellectual growth;" and that the thoughts of those whose lives are given to the study of nature are a great spiritual stream, the springs of which it behoved those early authors of our science, above all things, to keep pure and undefiled—a stream to which the boasted triumphs of our age stand in the relation of the ripples and bubbles upon its surface; and, on the other hand, the doctrine that the soul, with all its thoughts and aims and knowledge, is but "as the bell of a clock,"* which gives out a sound when it is struck, but has no effect whatever upon the working of the machinery. Nor can there be any doubt that the latter doctrine, if it were really believed, would have a paralysing effect on scientific research as well as on every other form of human activity. If, therefore, in this practical age Idealism is

* *The Hypothesis that Animals are Automata*, by Professor Huxley. *Fortnightly Review*, November, 1874, p. 576.

discredited because it is supposed to be unfavourable to the study of nature, it is not easy to see why this tendency of the doctrine of Automatism should not equally be taken into account; unless it be urged that this latter doctrine never is really believed at the decisive moment when the will acts, and therefore that it is comparatively innocuous.

If, on the other hand, we resolve rigidly to exclude all considerations of this kind, as being illegitimate, and say with Professor Huxley, "Consequences will take care of themselves; at most their importance can only justify us in testing with extra care the reasoning process from which they result;"* then must we no longer think to dispose of Idealism by means of Hume's phrase about arguments which "admit of no answer and produce no conviction;" but must treat the question at issue between Materialism and Idealism as one which must be decided by reasoning alone.

* Professor Huxley, on *The Hypothesis that Animals are Automata. Fortnightly Review*, November, 1874, p. 577.

There can be little doubt which of these two philosophies would prove the stronger in such a contest. If an appeal be made to a supposed verdict of our consciousness, that we perceive or infer in the external world something of a nature totally different from the mind which perceives it, and from the thoughts, or ideas, or sensations of which we are conscious; then is this verdict at least as contradictory to Materialism as to Idealism. If, on the other hand, it is treated as an illusion, and mind and matter are regarded as identical, by this course we destroy the very foundation upon which the case of the opponents of Idealism rested. The contest between Idealism and the rival system of Realism is described by Herbert Spencer as "the trial of Reason *versus* Perception"; * and in advocating the cause of the latter he complains† that "Reasoning has come to excite an amount of faith greatly in excess of that which is its due," and claims for direct perception an authority superior to it. But we cannot

* *Principles of Psychology*, Herbert Spencer. Vol. II. p. 317.
† *Ibid.*, p. 313.

thus rely upon perception as revealing to us matter as something altogether different in kind from our sensations and ideas; and then proceed to identify our sensations and ideas with matter.

A clear appreciation of this point is essential, as many philosophers of high repute appear to believe that by asserting the transcendental unity of the two series of antecedents and consequents of which we have been speaking, they are in some mysterious way disposing of all evidence of causation in the mental series, and are placed in a better position for asserting that it is absolutely impotent and entirely dependent on the causation of the mechanical series. Thus Du Bois-Reymond after (as we have seen) agreeing with Leibnitz in the assertion that the physical series is independent of the mental, and rejecting the complemental assertion that the mental series is equally independent of the physical, refers to the illustration of the two clocks constructed to go together, by which Leibnitz illustrated the pre-established harmony by which he reconciled the two, and declares the simplest solution to be, that the two

clocks whose harmony Leibnitz tried to explain, are at bottom one.* In the same way Herbert Spencer speaks of feeling and nervous action as "the inner and outer faces of the same change;"† and Professor Bain describes mental causation as "double or conjoint causation"; the agent in this causation being named by him "mind-body."

There is, according to the last-named writer, "an unbroken material succession," a chain of physical causes and effects, in which (as we have already seen) he strenuously denies that anything mental can possibly form a link. Thus, on the one hand, the physical series is never interrupted, and "the proper physical fact is a single objective fact." But on the other hand in the mental series we have always a two-sided phenomenon and a two-sided cause.‡

* *Über die Grenzen des Naturerkennens*, SS. 42, 43.

† *Principles of Psychology*, vol. I. p. 128. Third edition.

‡ While we go the round of the mental circle of sensation, emotion, and thought, there is an unbroken physical circle of effects. It would be incompatible with everything we know of cerebral action, to suppose that the physical chain ends abruptly in a physical void, occupied by an immaterial substance; which immaterial substance, after working alone, imparts its results to the

If in the mental series mind is in so close an unity with body that we are obliged to use the singular instead of the plural number, and to speak, not of mind and body, but of mind-body; the first impression conveyed by this use of the singular number might be, that the absolute identity of mind and body is thereby asserted. But this, as we have seen, would resolve Materialism into Idealism; which is certainly not Professor Bain's intention. The unity therefore must be represented as stopping short of absolute identity. The figurative expressions "two-sided

other edge of the physical break, and determines the active response—two shores of the material with an intervening ocean of the immaterial. There is, in fact, no rupture of nervous continuity. The only tenable supposition is, that mental and physical proceed together, as undivided twins. When, therefore, we speak of a mental cause, a mental agency, we have always a *two-sided cause;* the effect produced is not the effect of mind alone, but of mind in company with body. That mind should have operated on the body, is as much as to say, that a two-sided phenomenon, one side being bodily, can influence the body; it is, after all, body acting upon body."

* * * *

"The line of mental sequence is thus, not mind causing body, and body causing mind, but mind-body giving birth to mind-body."—*Mind and Body*, by Professor Bain, pp. 131, 132.

phenomenon," and "two-sided cause," would appear to be employed in order to obviate this danger; for of course no two sides of a material object could be identical. But, on the other hand, no theory of the union of mind and matter which falls short of identity, will enable us to transfer the causality of the mental antecedents to the corresponding physical antecedents, or to conceal from ourselves the presence of this new factor. It is impossible to ignore it; when we try to exclude it from one part of our theory it appears in another. If, to dispense with its action, we attribute all the causality to a transcendental unity in which the sides of this "two-sided cause" are united, it becomes all the more difficult to explain how the bodily side, which a moment before (according to Professor Bain) was "a single, one-sided, objective fact," has been changed into a mere side of a "two-sided phenomenon," without the introduction of something new which has caused this transformation. To avoid this breach of continuity, Professor Clifford, in the article to which I referred in the beginning of this lecture,

adopted a theory closely resembling that of Haeckel about the universal presence of mind with the atoms. "We are obliged," he said, "to assume, in order to save continuity in our belief, that along with every movement of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves."* But the result of this theory is the very reverse of that which he desired, for it practically admits mind to be the explanation of all the phenomena of the universe. In short, however anxious we may be to harmonise the mental and physical causal series, the desired harmony cannot be attained by denying the causal chain for whose existence we have the stronger proof; and we have seen that in three particulars the evidence for the mental series of causation is the strongest which we possess.

First. Both the design which is the antecedent here, and the perception of the accomplishment of that design which is a consequent, are states of consciousness; and our states of con-

* *Fortnightly Review*, December, 1874, p. 731.

sciousness are confessedly the foundation of all our knowledge.

Secondly. We have more constant experience of the connection of these antecedents and consequents than of any others; for, hour by hour and minute by minute, we form purposes, and anticipate their accomplishment, and find that the result confirms the anticipation.

Thirdly. We find a characteristic in the mental series which has no parallel in the physical, in virtue of which a new mental antecedent will often show us beforehand what the corresponding consequent will be.

If it should be objected to this treatment of the subject, that the rejection of all the methods proposed for harmonising the mental with the physical causal series, necessitates our abandonment of the problem as insoluble, and that this is a very unsatisfactory result to arrive at; we must reply, that it is not our first duty to arrive at satisfactory conclusions, but at true ones.

But it is well to look steadily at the problem which thus remains unsolved, and to mark the

precise nature of the enigma which it presents to us.

The enigma is of this character. We are unable to explain how two great results which would appear to be utterly incompatible with each other, are, nevertheless, actually attained in the universe. It is of the utmost importance for us that there should be fixed and constant laws of nature, that we should be able to decipher and to learn by experience its phenomena, and should know that once we have read its promises truly, we may rely on them absolutely. Our science, our civilisation and our progress depend on this. But at the same time, in order to perceive this regularity of nature, we must have the power of thought, and to profit by it we must have the power of action; and it is precisely the exercise of these powers, which appears to us to be irreconcilable by any wit of man with the very existence of that state of things in the world, for which our experience shows us they are so wonderfully adapted. The enigma here is a complete parallel to that which (as we saw in the last lecture) is pre-

sented to us by our cognitive powers. As there, the great mystery of our knowledge consists in the powerlessness of apparent limiting conditions which we might have supposed would have rendered it for ever impossible for us to take a single step towards knowledge of the external world; so here, the mystery of our action consists in the powerlessness of apparent limiting conditions which seemed as if they must have imprisoned our will in the links of the chain of mechanical causation, and have made it impossible that it should cause or direct any movement in any part of the material universe, including of course our own bodies, which form an integral portion of that universe.

The parallelism between the mystery of the mind perceiving and that of the will acting is not a merely superficial one; and the more closely they are examined the more significant will this likeness appear; so that if it be true (as Professor Bain states), that "a difficulty is solved, a mystery is unriddled, according as the mysterious fact can be shown to resemble other

facts"; * then have we the beginning of an explanation here.

In both alike the mind is found to have the power of singling out a remote group of phenomena, though between that group and the seat of sensation in the brain there intervenes a long series of innumerable antecedents and consequents which the mind never perceives at all, and of whose very existence it is totally ignorant.

When we look upon a flower at our feet, or a distant star in the heavens; what reaches the seat of perception in the brain is merely a series of molecular movements transmitted along our optic nerve; these movements were in their turn originated by the undulations of the luminiferous æther. How incorrect we are when we speak of the object perceived as the direct producing cause of the sensation, is brought home to us in the case of the star; for we know that years (which possibly may be counted by hundreds or even thousands) have elapsed since the series of links in this causal chain began at its surface.

* *Mind and Body*, by Professor Bain, p. 121.

Similarly, when we form a design to be realised a moment hence or a year hence; in each case a series of molecular movements intervenes, all of which movements, physically regarded, are in a closer relation to the motion in the brain than the result aimed at, yet the mind never contemplates them and has no knowledge of them whatever. The number of the physical antecedents and consequents which intervene is equally inconceivable in the perception of the star and in the realising of the design; yet we believe that the mind is able to perceive the one and to accomplish the other. On our trust in the first of these beliefs we build our science; our trust in the second is the foundation of our civilisation and our art.

The causality of the human will seems so obvious a truth to the majority of mankind, that most persons who were unacquainted with this controversy would perhaps think the subject an unprofitable one; but the establishment of the principle in question here involves important consequences in the great inquiry which engages us

in these lectures. These consequences were alluded to by Professor Clifford in the passage which I quoted from his article on "Body and Mind," in which he said, that if the action of the will on nature were admitted, we should thereby leave the way open for the doctrine of a Providence. If the admission which he deprecated is once shown to be necessary, then many of the facts which are relied upon in support of Materialism will only open wider this way. Thus, materialists have told us that the doctrine of the conservation of force makes it as difficult for design to act in the frame of man as anywhere else; but if of two problems the first is as difficult as the second, the second cannot at the same time be more difficult than the first. If the chain of physical causation pervades the human body as much as it does any other part of the universe, and yet cannot exclude the agency of Design there; the inference will be irresistible, that there must be room everywhere else for Design to work; and the only question will be, "Have we evidence for the existence of Design?"

Thus, another obstacle will have been removed, leaving the way free for the further prosecution of our inquiry.

LECTURE III.

DESIGN AND NATURAL SELECTION.

"*I will praise Thee; for I am fearfully and wonderfully made: marvellous are Thy works; and that my soul knoweth right well. My substance was not hid from Thee, when I was made in secret, and curiously wrought in the lowest parts of the earth. Thine eyes did see my substance, yet being unperfect; and in Thy book all my members were written, which in continuance were fashioned, when as yet there was none of them.*"—Ps. cxxxix. 14–16.

LECTURE III.

DESIGN AND NATURAL SELECTION.

IN my last lecture it was my duty to perform what most persons unacquainted with modern speculation would be likely to consider a very superfluous task, namely, to prove that the design of a painter has something to do with the production of his picture, the thoughts of a poet with the writing of his poem; and that the more prosaic designs which we all form every day have some influence upon our actions and our movements.

Obvious as this conclusion might appear, we saw that some of the ablest opponents of Theism regard, and rightly regard, it as involving an admission which would be fatal to their theory, the theory, namely, that the chain of physical causation extending throughout nature, excludes all possibility of the agency of Design. For the human muscles and nerves and brain are part of nature, and every molecular movement which takes place

in them is regarded by modern thought as a link in the physical chain admitting of no break.

This extension of the chain of mechanical causation into that portion of nature which is most intimately connected with our own consciousness enabled us to test by our consciousness the truth of the assertion that that chain excludes the operation of design ; and having applied the test which was suggested by Comte himself, that of the power of foreseeing the consequent by means of the antecedent, we were at once confronted by the fact that throughout our whole waking life, hour by hour and minute by minute, we foresee that designs of which we are conscious will be followed by corresponding action as a consequent ; so that we have in truth more abundant evidence for the succession of cause and effect or antecedent and consequent in the mental series than we have in the physical.

It was not my contention that there is any break in the links of the physical series, either in the brain of man or anywhere else. I simply urged that, whatever be the difficulty of harmonising the two chains of causation, we cannot solve the

problem by getting rid of that one which has the stronger evidence in its support.

Thus, when Materialistic Philosophy teaches us that the doctrine of the conservation of force makes it as difficult for Design to act in the brain of man as anywhere else, this teaching becomes capable of an entirely new application. If the chain of mechanical causation be as strong in the human body as anywhere else, and yet does not exclude the agency of design there, the inference is irresistible, that there must be room everywhere else for Design to work; and thus the way is cleared for the consideration of the question, "Have we evidence for the existence of Design elsewhere?"

But this is not the only respect in which the modern physiological doctrine of man's unity with nature is favourable to our argument.

So long as human movements and actions were regarded as an external force acting upon nature from the outside, the Teleological argument could be represented as seeking to apply to the interpretation of nature analogies drawn from an altogether distinct and separate system. Man's action,

it was said, is external, whereas the characteristic of nature's action is, that it works by internal forces and internal development; and you cannot therefore reason from the one to the other. But if man, physically considered, be absolutely and entirely a part of nature, man's forces must be regarded as forces internal to nature, and his actions and movements as not working on it from the outside, but forming part of its internal development. The argument, therefore, no longer labours under the disadvantage of passing from one separate and diverse system to another, but is seen to refer to two portions of one and the same system.

And if from the material phenomena we turn our attention to the question of design, we are then travelling beyond the physical region quite as much when we suppose the existence of design in our fellow-men as when we attribute it to the Author of nature; and further, in both cases alike we are leaving the sphere of direct observation and experiment. For we are compelled to recognise the justice of Professor Tyndall's statement, that

"there is no known method of superposition by which any one of us can apply himself intellectually to any other, so as to demonstrate coincidence as regards the possession of reason."

Each man is directly conscious of intelligence and design only in himself; and consequently our belief that our fellow-men possess either design or intelligence, is simply an hypothesis accounting for the fact that the phenomena which we call their words and actions are such as our own mental experience leads us by analogy to connect with intelligence and design. As Tyndall expresses it, "We cannot get beyond the 'As if.'"

The considerations on which I have thus dwelt will help us, I think, to meet an argument against Natural Theology, which is advanced with great confidence in the present day, and is sometimes represented as finally deciding the controversy.

Thus, the author of an anonymous work on Theism, published a few years ago,* declares that had it been his lot to have lived in the last genera-

* *A Candid Examination of Theism, by Physicus.* Trübner & Co., 1878.

tion, he "should have felt that the progress of physical knowledge could never exert any other influence on Theism than that of ever tending more and more to confirm that magnificent belief, by continuously expanding our human thoughts into progressively advancing conceptions." . . . "But now," he says, "how changed! Never in the history of man has so terrific a calamity befallen the race as that which all who look may now behold advancing as a deluge, black with destruction, resistless in might, uprooting our most cherished hopes, engulfing our most precious creed, and burying our highest life in mindless desolation. Science, whom erstwhile we thought a very angel of God, pointing to that great barrier of law, and proclaiming to the restless sea of changing doubt, 'Hitherto shalt thou come, but no further, and here shall thy proud waves be stayed,' even Science has now herself thrown down this trusted barrier." *

The argument to which this startling metaphor is applied, consists in a development of

* *A Candid Examination of Theism*, p. 51.

the theory that "all and every law follows as a necessary consequence from the persistence of force and the primary qualities of matter."* So that all the phenomena of nature are simply a necessary consequence of the properties of matter as it existed in the primæval nebula from which our system originated as it cooled down. "It does not," he says,† "admit of one moment's questioning, that it is as certainly true that all the exquisite beauty and melodious harmony of nature follow as necessarily and as inevitably from the persistence of force and the primary qualities of matter, as it is certainly true that force is persistent, or that matter is extended and impenetrable. No doubt this generalization is too vast to be adequately conceived; but there can be little doubt that it is necessarily true. If matter and force have been eternal, so far as human mind can soar it can discover no need of a superior mind to explain the varied phenomena of existence."

* *Ibid.*, p. 52. † *Ibid.*, p. 63.

And in another place he writes,* "I assert with confidence that in the one principle of the persistence of force we have a demonstrably harmonising principle, whereby all the facts within our experience admit of being collocated under one natural explanation, without there being the smallest reason to attribute these facts to any supernatural cause."

Now, in estimating the force of the objection to the Teleological Argument which is based upon this principle, I think the primary fact to which it is important that we should direct our attention is this—that it is a necessarily universal principle. It is one, writes this author, "whereby all the facts within our experience admit of being collocated under one natural explanation." It is this, or it is nothing.

Every form, every movement on earth or in air, has been necessarily developed from the original nebula in accordance with the Conservation of Force. It comes before us as an explanation of every phenomenon in nature, of

* *A Candid Examination of Theism*, p. 161.

every molecular movement in the tissues of plants and in the muscles and nerves of birds, or beasts, or men; and consequently, of course, of everything which has been produced by these movements. But just for this reason, because it explains every phenomenon equally, it cannot be brought forward to establish any distinction between different classes of phenomena. Now, the Physico-Theological argument is an argument from analogy; and an argument of this kind may be met by exhibiting points of difference between the classes of phenomena which it compares together, but it certainly cannot be overthrown by showing that they stand in an identical relation to one common principle.

All our actions are equally in acordance with the principle of the Conservation of Force; but there is a principle, the principle of Design, of which we are conscious in ourselves, and which we know is sometimes embodied in our actions and is sometimes wanting in them; and we learn by experience that the results which we produce in any form of work are orderly or

chaotic, according as our actions have or have not been intelligently guided according to this principle.

If we have constructed anything which exhibits elaborate adaptations, our memory tells us a design was present to our mind before and during the work; if we have produced something which is meaningless and chaotic, we are convinced that this characteristic has appeared because of the absence of design in our mind, or because we have failed, as we would say, to embody it in our work—unless, indeed, we designed to produce work that should be meaningless. Our own consciousness thus makes us acquainted with the principle of design as a cause of order and adaptation; and the question arises, Ought we to infer the existence of this principle when we observe apparent adaptations of a marked character elsewhere in nature, though we are directly conscious of design only in our individual selves?

Now, every reasoning human being, whether he be learned or unlearned, philosopher or pea-

sant, agrees without hesitation to extend this inference so far as to include the phenomena which he attributes to his fellow-men; nor can any human being produce any argument to explain his so doing other than an argument from analogy. For, as Professor Flint has justly remarked,* "the use of spoken and written language, the production of machinery, the association of efforts, the co-ordination of actions, etc., are not independent chains of reasoning, but simply links in the one chain of inference from the evidences of design to intelligence, which is the only proof we possess that other men have minds."

Since therefore we all agree in making this inference from some of the phenomena of nature, if we are to refuse to do so in the case of other phenomena where the marks of adaptation are admittedly far more numerous and wonderful, we ought to be able to give a sufficient reason for this refusal. Such a reason cannot be found

* Preface by Professor Flint to Affleck's translation of Janet's *Final Causes*, p. xiii.

in the existence of a necessarily universal principle like the persistence of force, which, just because it is universal, must logically forbid the one inference as much or as little as the other. But neither must it be the supposition of an unknown cause, for there is a rule of sound reasoning of which the opponents of Theology are sometimes fond of reminding us, which lays down the principle that causes are not to be multiplied needlessly, and that we are not to assume the existence of an unknown cause so long as any known cause will account for the phenomena that are the subject of inquiry. It is a flagrant violation of this principle, when we are told that, however strong may appear the evidences of Design in the phenomena of nature, we are not to attribute these phenomena to design, because they may be due to an unknown cause, which, it is sometimes added, may be very much higher than design. If we were to refuse to believe a geologist who pointed out marks of glacial action in the past, and when he asked us, "How could we account for the

phenomena otherwise?" were to reply, "By some cause which is unknown and perhaps unknowable," he would feel at once that our method of arguing was one which, if admitted, would paralyse all the inductions of his science. A known cause which will explain the facts can only be displaced by another cause which will explain them better.

Now, Design is a cause which is made known to us in our consciousness as possessing a peculiarity which sharply distinguishes it from every physical cause known to man; for it calls the future and the non-existent into an ideal existence, and then selects and adapts present phenomena, so shaping them that they must co-operate for a result which as yet has no local habitation in nature. Our own experience thus gives us a clue to explain the enigma "How can a future which does not yet exist influence the present?" The explanation being, that though it does not yet exist physically, it has already an ideal existence in our mind.

Now, nature teems with complicated adapta-

tions, in which it appears as if the future had in this way influenced the present. The eye, with its wonderful machinery, with its innumerable and exquisitely delicate adaptations for the reception of light, is "made in secret," and fashioned in darkness, where no ray of light can as yet come near it.* The ear, while it is being shaped and moulded, is quite cut off from the vibrations of air for the reception of which its complicated machinery is in process of construction. These are but two among millions of the processes of nature which reveal the same characteristic.

In many of these processes, as we watch what is taking place, the thought of the future result forces itself irresistibly upon our minds. The

* Dr. Martineau, in his *Study of Religion*, insists with much force upon the striking nature of the problem which the formation of this organ presents to us. He says, "A microscope invented in a city of the blind could hardly surprise us more; it is a correct vaticination of the laws of refraction in a realm that has never even heard of light. Is it possible for imagination to conceive of a clearer case of pre-established harmony between elements that have no acquaintance with each other, and that can be made ready for their future relation only by a mind that embraces them both?" Vol. I., p. 305.

course of things in the present appears to be directed and shaped by the idea of what is to be. Yet the mechanical view of the world cannot recognise ideas here. For it, the position of the universe in any moment is the unconditional mechanical result of its position the moment before, and the unconditional mechanical cause of its condition the moment after. Such is the time order, and it cannot be reversed. The future is as yet absolutely non-existent, and the non-existent cannot possibly be a cause.

The mere law of Development will not remove this difficulty for the Materialist; unless it can be shown that development itself is consistent with the purely mechanical view of the world. A development working for a future result would contradict this view instead of establishing it; and to attribute this tendency of its operation to the original constitution of matter is only to trace back the design further, and to make it more wonderful and more comprehensive. Du Bois-Reymond admitted that no way out of his "Fourth Difficulty" could thus be con-

structed. "Organic laws of formation," he says, "could not work teleologically unless matter were teleologically formed at the beginning; laws working in this way are consequently irreconcilable with the mechanical view of nature." *

Nevertheless, Du Bois-Reymond, as we have already seen, did not believe this problem to be an altogether insoluble one. He did not conceive himself here (as he did in some of the other difficulties, and notably the second in order, which has been already discussed,) as limited to the choice between Pyrrhonism and Supernaturalism, but eagerly welcomed an alternative explanation in the doctrine of Development by Natural Selection. This doctrine is by many writers confounded with the doctrine of Development itself; but the two are perfectly distinct. It is one thing to assert that development is the law of the world, and quite another thing to assert that this development is solely

* "Organische Bildungsgesetze können nicht zweckmässig wirken, wenn nicht die Materie zu Anfang zweckmässig geschaffen wurde; so wirkende Gesetze sind also mit der mechanischen Naturansicht unverträglich."—*Die Sieben Welträthsel*, S. 78.

caused by the action of Natural Selection in choosing the fit and rejecting the unfit.

The special bearing upon this controversy of the theory which holds Natural Selection to be (in combination with heredity), the exclusive agency in development, consists in this. We would thereby show that it is the past, and the past only, which has been the cause of everything in the present which appears to be determined by its relation to the future. The better organized plants and animals were better fitted for the struggle for life, and so survived while others perished; and the survivors transmitted their superior organisms to their offspring according to the principle of heredity.

This theory (as we have seen) Du Bois-Reymond compared to a plank which supports in security on the surface of the ocean a man who, but for it, must have sunk beneath its depths. And among the opponents of Theism the doctrine is now very generally regarded as the most effective means of withstanding the argument for the existence of a Personal God which is derived from

the marks of design which meet us in nature. Thus Mr. John Morley declares,* that in the face of the Darwinian hypothesis, with the immense mass of evidence already accumulated in its favour, the inference from contrivance exists, to say the least of it, in a state of suspended animation. And John Stuart Mill,—after frankly admitting that in the argument from Marks of Design we "reach an argument of a really scientific character, which does not shrink from scientific tests, but claims to be judged by the established canons of Induction," †—afterwards adds: "Creative forethought is not absolutely the only link by which the origin of the wonderful mechanism of the eye may be connected with the fact of sight. There is another connecting link on which attention has been greatly fixed by recent speculations, and the reality of which cannot be called in question, though its adequacy to account for such truly admirable combinations as some of those in Nature, is still and will pro-

* *Critical Miscellanies*, by the Right Hon. John Morley, M.P. Second Series, p. 324.

† *Three Essays on Religion*, by J. S. Mill, p. 167.

bably long remain problematical. This is the principle of 'the survival of the fittest.'"

Now, in inquiring whether the doctrine of Natural Selection can be an adequate substitute for the doctrine of Design, we must first of all bear in mind that the law of Natural Selection can act only by destroying the unfit, not by producing the fit. Those who would oppose it to Design, must contend that order is produced out of an infinite or at least an immense number of chance combinations by the elimination of the unfit. It can produce nothing, and can develop nothing further than by letting it alone. Therefore, to regard it as a positive cause would show great confusion of thought. Let us suppose that we are impressed by the admirable architecture of a city, and that, on our asking about its architects, we are informed that there never were any—that there is in this city a law that every building which is unfit for human habitation must be destroyed. "Thus" (we will suppose our informants to say) "the fundamental laws of the city render it impossible that there should be

any unfit houses in it. Why, then, should you seek for any further cause of that fitness of the architecture which excites your admiration?" Would we not in such a case reply, "But there might have been no houses at all"? Each of the elements of the perfection of those organisms which, owing to their superiority, have survived in that struggle for life by which Natural Selection works, must have come into existence before Natural Selection could test it. That perfection must either have been designed or undesigned—must, in other words, have been the work of design or have come by chance; for when we say a thing happens by chance, we mean nothing else than that it happens without design.

We may then, substituting a less partisan metaphor for that of Du Bois-Reymond, say that there are two keys by which we may try to open the lock of this mystery—Design on the one hand, Chance, aided by Natural Selection, on the other.

When I speak of the hypothesis of Design as opening this lock for us, I mean, that it will account for the adaptations which are so striking

a feature in nature ; but this by no means implies that we profess to be able to explain the purpose of everything there. There is a very happy illustration of this distinction in the works of Boyle. "Suppose" (he says) * "that a countryman, being on a clear day brought into the garden of some famous mathematician, should see there one of those curious gnomonic instruments that show at once the place of the sun in the zodiac, his declination from the equator, the day of the month, the length of the day, etc., it would indeed be presumptuous in him, being unacquainted both with the mathematical discipline and the several intentions of the artist, to pretend or think himself able to discover all the ends for which so curious and elaborate a piece was framed ; but when he sees it furnished with a style, with horary lines and numbers, and manifestly perceives the shadow to mark from time to time the hour of the day, it would be no more a presumption than an error in

* *An Essay inquiring whether, and how, a Naturalist should consider Final Causes.* Vol. iv. p. 519 of Boyle's Works, edited by Rev. T. Birch in five volumes.

him to conclude, that (whatever other uses the instrument was fit or was designed for) it is a sundial, that was meant to show the hour of the day."

The countryman in this illustration would certainly make a great mistake if he treated all those parts of the instrument for which he could perceive no purpose, as being necessarily undesigned, and adduced them as proofs that there was no design even in those parts where he himself could discern marks of adaptation. Yet a large number of objections to the teleological argument, which enter into details, proceed on a like principle, censuring everything whose use they cannot discern, and sometimes with a rashness which one might have supposed a very little reflection would have shown them to be unwarranted.

Thus a really able philosopher like Lange * finds fault with the wastefulness of nature, as evidenced

* "Vom Blüthenstaub der Pflanzen zum befruchteten Samenkorn, vom Samenkorn zur keimenden Pflanze, von dieser bis zu der vollwüchsigen, welche wieder, Samen trägt, sehen wir stets den Mechanismus wiederkehren, welcher auf dem Wege der tausendfältigen Erzeugung für den sofortigen Untergang und des zufälligen Zusammentreffens der günstigen Bedingungen das Leben so weit

by the fact that out of millions of seeds so few germinate, and seriously produces this as a proof that there is no design in nature. Are we then quite certain that grains which are prevented from germinating are to be branded as failures? Are those which are eaten by men wasted because they never can germinate? Even a philosopher intent on overthrowing the "Design Argument" would scarcely maintain that. But are those seeds wasted which are eaten by birds? From a farmer's point of view it may appear so; yet if the birds could speak, they might put in a plea for a wider view of the case.

But, it may be replied, all objections are not directed against those phenomena of the universe whose purpose can be supposed unknown to us. An attack has been made upon the stronghold of the teleological argument, the structure of the eye.

erhält, als wir es in dem Bestehenden erhalten sehen. Der Untergang der Lebenskeime, das Fehlschlagen des Begonnenen ist die Regel; die 'naturgemässe' Entwicklung ist ein Specialfall unter Tausenden; es ist die Ausnahme, und diese Ausnahme schafft jene Natur, deren zweckmässige Selbsterhaltung der Teleologe kurzsichtig bewundert."—*Geschichte des Materialismus*, B. II., S. 246.

Helmholtz has enumerated seven defects in it considered as an optical instrument, and has declared that if an optician wanted to sell him an instrument which had all these defects, he should think himself quite justified in blaming his carelessness in the strongest terms, and giving him back his instrument.*

Now, when we inquire into the precise nature of these alleged defects, the first thought that must occur to us is, that mankind have been so little inconvenienced by them, that they have lived for thousands of years in complete ignorance of their existence ; even in the present day very few people are aware that they have a blind spot in each eye, where the optic nerve enters. The imperfections almost always affect those parts of the field of vision to which we are not directing our attention ; so that even after we have been told how to observe them, it is very difficult to do so at first.

But the name of Helmholtz is of such high

* *Popular Lectures on Scientific Subjects*, by Helmholtz, translated by Atkinson, p. 194.

repute in science that the most effective way to meet these objections will be to summon as a witness on the other side Helmholtz himself.

For, after having blamed the eye optically, he proceeds to praise it physiologically. "All these imperfections," he tells us,* "would be exceedingly troublesome in an artificial camera obscura, and in the photographic picture it produced. But they are not so in the eye, so little indeed, that it was very difficult to discover some of them."† He declares that, "Wherever we scrutinize the construction of physiological organs, we find the same character of practical adaptation to the wants of the organism ;‡ although, perhaps, there is no instance which we can follow out so minutely as that of the eye." § And finally, he draws from the evidence this conclusion : "The adaptation of the eye to its function is, therefore, most complete, and is seen

* Page 198. † *Ibia.*

‡ This fact did not altogether escape the notice of previous generations. Pope wrote :

"Why has not man a microscopic eye?
For this plain reason :—Man is not a fly."

§ Page 201.

in the very limits which are set to its defects. Here the result, which may be reached by innumerable generations working under the Darwinian law of inheritance, coincides with what the wisest Wisdom may have devised beforehand."*

Now, with regard to this strangely contrasted blame and praise, it is important to notice, that the blame applies only to an imaginary state of things, which, happily for us, has no actual existence; but the praise applies to the existing constitution of nature. While that constitution is, by this philosopher, attributed to Natural Selection, its characteristics are acknowledged to be such as the wisest Wisdom may have devised beforehand. Thus, even in the act of offering to us another key, he admits that the key of Design fits the lock here. In somewhat similar language (though speaking of an altogether different department of nature), Darwin writes in his work *On the Fertilization of Orchids.*

"The more I study nature, the more I become impressed with ever-increasing force with the con-

* *Popular Lectures on Scientific Subjects*, page 201.

clusion that the contrivances and beautiful adaptations slowly acquired through each part occasionally varying in a slight degree, but in many ways with the preservation or natural selection of those variations which are beneficial to the organism under the complex and ever varying conditions of life, transcend in an incomparable manner the contrivances and adaptations which the most fertile imagination of the most imaginative man could invent." *

In these passages we have a strong assertion by each of these two philosophers, that there are in the phenomena of nature adaptations such as would characterize the work of the wisest Wisdom, while we have an equally strong assertion that these characteristics are really due to Natural Selection.

In this state of the controversy, the best way of deciding which of these two causes, Design or Natural Selection, is the true master-key of the universe, will be to try them in another lock,

* *On the Fertilization of Orchids by Insects.* Charles Darwin, F.R.S. 2nd edition, pp. 285, 286.

different from that in which they have been hitherto tested. I believe that there are in the universe other phenomena of nature, as marvellous as those which we have been considering, phenomena which cannot by any possibility be conceived to have been produced by Natural Selection, while they are of a type which experience teaches us that Design is able to originate and for which it can suggest to us no other cause whatsoever. This inquiry will be the subject of my next lecture.

LECTURE IV.

THE BEAUTIFUL AND SUBLIME.

"*The heavens declare the glory of God.*"—Ps. xix. 1.

LECTURE IV.

THE BEAUTIFUL AND SUBLIME.

THE phenomena to which I alluded, at the close of my last lecture, as furnishing a possible test for the alternative doctrines of Design and Natural Selection, are the beauty and the sublimity with which it is often impossible to avoid being impressed when we survey the universe in which we live. They appear to demand investigation quite as much as the utilitarian adaptations in nature on the consideration of which this controversy has generally been made to turn. Their existence is a fact which cannot be explained away. We may admit to the fullest extent all that Kant says about the purely æsthetic and ideal character of beauty, and its being only a relation between the concept of the beautiful object and the perceiving mind; but, after we have assented to this, we are still confronted by the fact that this relation is one which cannot

be created by the perceiving mind when and where it likes; and in the case of a considerable number of beautiful objects our experience not only teaches us that this relation has a cause external to ourselves, but reveals to us what that cause is.

For it is not only in the way of contemplation that mankind have to do with the beautiful. Some of our race can and do produce work of various kinds displaying this characteristic; and all of us may attempt to produce it. And the universal experience of mankind is, that in any work which they undertake beauty never is produced by chance. Ask the architect, the painter, or the sculptor how you can attain it, and the answer will in substance be the same.—"You must have artistic power and skill, and you must put your mind into your work." If an architect, in constructing some great building, forgets the question of beauty, and aims only at making the structure useful and cheap, there is not the remotest possibility that it will be beautiful. Here beauty never comes unsought or by chance.

The worker in any beautiful art has to select and choose between possibilities as much as an engine-builder or a shipwright; and the frequency of failure in this kind of work would seem to show that the number of possible combinations whose result is ugliness as far exceeds the number of those which result in a beautiful work of art as the number of chance combinations which would have produced nothing useful exceeds the number of those whose result is a useful machine.

When therefore we compare beautiful objects with other instances of adaptation such as have been already considered, we find that in the production of both alike we have the remarkable phenomenon of the continual selection, out of an immense number of possibilities, of those and those only which lead to a particular future result. The idea of an as yet unrealised future appears to mould and guide what is happening in the present. We know from our own self-consciousness that a designing intelligence possesses this wonderful power; and whilst we are directly conscious of design only in our individual

selves, we have none of us any hesitation in extending our inference of its existence so far as to take in the field of human art equally with any other branch of human industry.

Here therefore, as well as in those other kinds of adaptation, we cannot evade the question, "Why should we not extend our inference to all the instances in which this phenomenon occurs?"

We have thus a parallel to the enigma which, as we have seen, so perplexed Du Bois-Reymond that he declared the doctrine of "Natural Selection" to be to him what a plank is to a shipwrecked sailor floating on the surface of the ocean, *i.e.*, the only means by which he can save himself from sinking beneath its waters; and we have now to inquire whether a similar alternative can here be suggested. Will the doctrine of the survival of the fittest by means of natural selection afford a possible explanation of the beauty of the world?

Darwin judged the matter to be one which did require explanation; and his theory on the subject was briefly as follows. The colours of flowers

render them conspicuous in contrast with the green leaves which surround them, so that they may be more easily discerned by the insects which fertilise them; and the beauty of butterflies and of birds is due to sexual selection, the more beautiful having been preferred by their fellows, and their race preserved, whilst others perished.

The adequacy of this explanation has been contested with much force by some writers. They have contended that it credits the birds and butterflies with a delicate appreciation of colour which is very improbable; and that in the case of the flowers which owe their fertilisation to their conspicuous colour, it would only account for their bright and strong colours, not for their beautiful pencillings and delicate shades.

But while the conflict about points of detail like these has been maintained with great ability and research, I cannot find that any writer has called attention to the broad fact that it is no longer the doctrine of Natural Selection which is offered in explanation here. The Survival of the Fittest has become the Survival of the Fittest to

please. A new element has come into action, the element of consciousness and also of a rudimentary form of choice and will; and without this element the theory will not work. Though it be the choice and will of very tiny beings, it is none the less by the exercise of will and choice that the selection here spoken of operates. The insects are attracted by exquisite flowers, the birds by the fair forms or beautiful songs of their mates; and through their being thus attracted to some rather than to others it is practically determined that that which is most beautiful shall be perpetuated.

The alteration in Darwin's theory to which the nature of the problem here compelled him, is no mere modification on a matter of detail, but a fundamental change in its nature. The theory, as now altered, no longer seeks to explain everything without the action of design, but rests its basis on the existence and action of consciousness and will.

And now, bearing this in mind, let us take a step further. There is other beauty in the world

beside that of birds and flowers. There is the beauty of mountains and valleys, of forests, of sea and shore, the hues of sunrise and of sunset, and the midnight sky. How can the doctrine of the survival of the fittest among a number of fortuitous combinations be made to work here? We saw that its author was obliged to have recourse to the hypothesis of choice and selection made by living beings in order to explain the minuter beauties of nature. But no being but One can work on the tremendous scale that we have to do with now.

At the close of the last lecture I quoted passages showing that the greatest champions of the sole agency of Natural Selection in the development of nature, men like Darwin and Helmholtz, admitted that the adaptations existing in Nature are such as "the wisest Wisdom may have devised beforehand"; but while this acknowledgment was made in a most complete and most striking way, it was at the same time maintained that Natural Selection (not working as an instrument that carries out and itself forms a part

of the plan of the wisest Wisdom, but Natural Selection alone, forming a substitute for any Designing Intelligence) was sufficient to account for this appearance of design, marvellous as it is; and the majority of writers of the same school show more and more a disposition to make the whole controversy turn upon the adequacy of Natural Selection to explain the adaptations which appear in Nature.

Under these circumstances it is clear that the argument derived from the existence of the Beautiful and the Sublime in Nature acquires an importance far exceeding that which writers on Natural Theology have hitherto assigned to it; for it is drawn from facts which the doctrine of Natural Selection (though it were admitted to the fullest extent) cannot touch at all; and once this is recognised, it is of course to be expected that this proof will be made the object of special attack.

Now, whoever brings forward a proof of an important conclusion, which has been little relied on hitherto, has usually the disadvantage of

being ignorant of the nature of the attacks to which the new line of proof may be open. For a person in such a position to attempt to anticipate objections is generally a futile course. Those which appear to him the most forcible that can be devised will probably be repudiated by his critics and will be regarded as mere opponents of straw constructed only for the purpose of being overthrown.

This disadvantage, however, is not ours in dealing with this line of proof. Though it was but little relied upon by Natural Theologians in his day, Kant perceived that from this source a formidable argument might be derived; and he has devoted part of the *Kritik der Urtheilskraft* to its criticism. It was by him considered to be a matter of great importance to show that man's reason is not justified in asserting theoretically the existence of God.

This limitation he speaks of as "manifestly advantageous" for the purpose of preventing Theology from trespassing and losing itself in "Theosophy," "Demonology," "Theurgy," or

"Idolatry."* His wish was to confine it strictly to the region of morality (the exercise of the Practical Reason), and even there to allow it a merely subjective validity.

From the stand-point which he thus assumed Kant necessarily became a hostile critic of any such independent proof of the existence of an intelligent Author of Nature as he foresaw might suggest itself to the mind of an observer of the beauty and sublimity of the universe.

His first objection against the existence of design here is, that "the reason through its maxims guards as much as possible against the unnecessary multiplication of principles."

* "Die Einschränkung der Vernunft in Ansehung aller unseren Ideen vom Uebersinnlichen auf die Bedingungen ihres praktischen Gebrauchs hat, was die Idee von Gott betrifft, den unverkennbaren Nutzen: das sie verhütet, das Theologie sich nicht in *Theosophie* (in vernunftverwirren de überschwengliche Begriffe) versteige, oder zur *Dämonologie* (einer anthropomorphistischen Vorstellungsart des höchsten Wesens), herabsinke; das *Religion* nicht in *Theurgie* (ein schwärmerischer Wahn, von anderen übersinnlichen Wesen Gefühl und auf sie wiederum Einfluss haben zu können,) oder in *Idololatrie* (ein abergläubischer Wahn, dem höchsten Wesen sich durch andere Mittel als durch eine moralische Gesinnung wohlgefällig machen zu können) gerathe."—*Kritik der Urtheilskraft*, § 89.

Is then the recognition of Design as a possible cause of beauty in Nature an unnecessary multiplication of principles? We have seen that all who do not hold the theory of automatism to its fullest extent, admit that design must be recognised as a cause of some of the beautiful things which exist in the world—those namely which are commonly spoken of as products of human art — though mechanical law prevails here as much as anywhere else; nor can the principle of the conservation of force, if it is to retain any meaning at all, allow any exception in this province.

Now, from the moment of the recognition of this fact, design must rank as a principle which has already been admitted as an explanation of some at least of the phenomena of Nature; so that the question about the cause of beauty and sublimity in its other phenemena need no longer be a question of multiplying principles by introducing a new one, but rather concerns the further admission of a principle which has been recognised already. And this in no way conflicts with

the "Maxim of the Reason" to which appeal is made by Kant.

The foregoing objection is only referred to by Kant parenthetically before introducing one of an empirical character upon which he appears to lay great stress.* "Nature," he says, "everywhere shows in its free formative acts as much mechanical tendency to the production of forms which appear, as it were, to be made for the æsthetic exercise of our judgment, without affording the least ground for the supposition that there is need of anything more than its mechanism, merely as nature, according to which, without any idea originating them, they can, as regards our judgment, be conformable to purpose."

* "Dagegen widersetzt sich dieser Annahme nicht allein die Vernunft durch ihre Maximen, allerwärts die unnöthige Vervielfältigung der Principien nach aller Möglichkeit zu verhüten, sondern die Natur zeigt in ihren freien Bildungen überall so viel mechanischen Hang zu Erzeugung von Formen, die für den ästhetischen Gebrauch unserer Urtheilskraft gleichsam gemacht zu sein scheinen, ohne den geringsten Grund zur Vermuthung an die Hand zu geben, das es dazu noch etwas mehr als ihres Mechanismus, bloss als Natur, bedürfe, wornach sie, auch ohne alle ihnen zum Grunde liegende Idee, für unsere Beurtheilung zweckmässig sein können." —*Kritik der Urtheilskraft*, § 58.

He tells us further that by "free formative acts of Nature," he means, "those whereby from a fluid at rest, through the volatilization or separation of a portion of its constituents (sometimes merely of caloric), the remainder in becoming solid assumes a fixed form or texture." And he instances the formation of crystals, and of ice, of many salts, and of stones which have a crystalline form, and the beautiful crystallizations found in some mines.

Of the fact of the exquisite beauty of crystalline formations, to which Kant here calls attention, there can be no doubt; chemists tell us that it shames all the art of the architect or the sculptor. But instead of this fact opposing itself, as he asserts, to the hypothesis of design, the absence of beauty here might with more force have been represented as throwing doubt upon its being the true explanation of beauty in organic nature, and in the vaster combinations in the world. It might then have been contended that we had here a proof that the beauty of organized forms was due to such causes as those to which Darwin attributed it, and that our being affected by the

beauty or sublimity of natural scenery must be ascribed to the association of ideas, and to the inherited effects upon the organism of the human race, produced by the surroundings amid which countless generations of our progenitors have lived, and to which our perceptive faculties have become adapted. Science, it might then have been urged, has introduced us now to some of the machinery of nature which, being inorganic, cannot have been affected by natural selection, and having for the most part been hidden from man hitherto, has not, like the sunset and the sunrise, or the contour of hills and valleys, influenced for ages his perceptive faculties. Thus it has revealed to us the secret that where these causes cease to operate, beauty no longer exists, or at least is not met with oftener than might have been expected to result from the blind play of mechanical forces. If you could show a preponderance of beauty here, then and then only might you have maintained that these alternative causes fail to explain the facts.

There would have been considerable force in an

argument of this kind, had the more elementary processes of Nature which science has only recently disclosed to man, shown no indications of a tendency towards beauty; and as the state of the case is the very reverse of this, and Nature here, as Kant truly says, shows everywhere a tendency to beauty, it becomes a far more hopeless task to account by any alternative cause for the beauty of the universe, ever manifesting itself to man in new departments, and in a wider range.

The forms disclosed to us in this new department of Nature are for the most part strikingly unlike those which the association of ideas might have accustomed us to regard as beautiful. Writers who attribute our judgment of the beauty of natural objects to their association in our minds with objects which have given us pleasure, have generally dwelt much upon the beauty of rounded forms and soft curves, which recall a dim recollection of things soft and pleasant to the touch; and it might be urged that from the necessary tendency of friction to reduce hard

bodies to this form, the chances in favour of beauty of this kind appearing frequently under purely mechanical law are far more favourable than I have represented them to be. But it is a remarkable fact that in crystallisation the rounded shape never occurs at all; all forms there are angular; yet are at the same time regular and beautiful.

That it is not a matter of course that this should be so, may be seen at once by observing that any interference on our part with the process will mar this result just as artistic work would be marred by similar interference. Let us hear on this subject a chemist who is as little likely to be prejudiced in favour of the Physico-Theological argument as Kant himself. "Here," says Professor Tyndall,* "is a solution of common sulphate of soda, or Glauber salt. Looking into it mentally, we see the molecules of that liquid, like disciplined squadrons under a governing eye,

* *On Crystalline and Slaty Cleavage.* From a discourse delivered in the Royal Institution of Great Britain, June 6, 1856. *Fragments of Science.* Vol. i. pp. 357, 358.

arranging themselves into battalions, gathering round distinct centres, and forming themselves into solid masses, which after a time assume the visible shape of the crystal now held in my hand. I may, like an ignorant meddler wishing to hasten matters, introduce confusion into this order. This may be done by plunging a glass rod into the vessel; the consequent action is not the pure expression of the crystalline forces; the molecules rush together with the confusion of an unorganised mob, and not with the steady accuracy of a disciplined host. In this mass of bismuth also we have an example of confused crystallisation; but in the crucible behind me a slower process is going on: here there is an architect at work 'who makes no chips, no din,' and who is now building the particles into crystals, similar in shape and structure to those beautiful masses which we see upon the table. By permitting alum to crystallise in this slow way, we obtain these perfect octahedrons; by allowing carbonate of lime to crystallise, nature produces these beautiful rhomboids; when silica

crystallises, we have formed these hexagonal prisms capped at the ends by pyramids; by allowing saltpetre to crystallise, we have these prismatic masses, and when carbon crystallises, we have the diamond."

Kant's third objection, which is of a different character from the one which has just been noticed, was considered by him to be completely decisive of this question. He states it thus :—*

* Was aber das Princip der Idealität der Zweckmässigkeit im Schönen der Natur, als dasjenige, welches wir im ästhetischen Urtheile selbst jederzeit zum Grunde legen, und welches uns keinen Realismus eines Zwecks derselben für unsere Vorstellungskraft zum Erklärungsgrunde zu brauchen erlaubt, geradezu beweist, ist, dass wir in der Beurtheilung der Schönheit überhaupt das Richtmaass derselben *à priori* in uns selbst suchen, und die ästhetische Urtheilskraft in Ansehung des Urtheils, ob etwas schön sei oder nicht, selbst gesetzgebend ist, welches bei Annehmung des Realismus der Zweckmässigkeit der Natur nicht stattfinden kann; weil wir da von der Natur lernen müssten, was wir schön zu finden hätten, und das Geschmacksurtheil empirischen Prinzipien unterworfen sein würde. Denn in einer solchen Beurtheilung kommt es nicht darauf an, was die Natur ist, oder auch für uns als Zweck ist, sondern wie wir sie aufnehmen. Es würde immer eine objective Zweckmässigkeit der Natur sein, wenn sie für unser Wohlgefallen ihre Formen gebildet hätte, und nicht eine subjective Zweckmässigkeit, welche auf dem Spiele der Einbildungskraft in ihrer Freiheit beruhte, wo es Gunst ist, womit wir die Natur, aufnehmen, nicht Gunst, die sie uns erzeigt."—*Kritik der Urtheilskraft*, § 58.

"But what shows the principle of the ideality of the conformity to purpose in the beauty of Nature, as that which we ourselves always lay as the foundation in the æsthetic judgment, and which prohibits us from using as an explanation for our imaginative faculty any hypothesis of a real purpose in it, is the fact that in judging beauty we invariably seek its gauge in ourselves *à priori*, and our æsthetic power of judgment itself acts in a legislative capacity with regard to the judgment whether any object is beautiful or not, which on the assumption of the real conformity to purpose in Nature could not take place. Because in that case we must have learned from Nature what we ought to consider beautiful, and the æsthetic judgment would be made subject to empirical principles. For in such an act of judging, the important point is not, what Nature is, or even, as an end, is in relation to us, but how we take it. There would be an objective conformity to purpose in Nature, if it had moulded its forms for our pleasure; and not a subjective conformity to purpose which depended upon the

play of our imagination in its freedom, where it is we who receive Nature with favour, not it which shows us favour."

The fact upon which this argument of Kant is founded, namely, our seeking the gauge of beauty in our own mind, may be shown from his own definition to be a necessary result of the very nature of beauty. It is, he tells us, a relation of the concept of the object to the subject,* that is to us as we contemplate it. It is plainly impossible to determine whether the idea of any particular object stands in this relation to our mind except by referring to our mind. To act otherwise would be to ignore one of the terms of the relation. But as this fact that we find the gauge of beauty in ourselves arises from the very nature of beauty, it holds good necessarily for beauty of every kind, for the beauty of Art as well as for the beauty of Nature; and therefore cannot be used to establish a distinction between them. In the case of Art, none, I think, will

* "Bloss eine Beziehung der Vorstellung des Gegenstandes aut das Subject enthält."—*Kritik der Urtheilskraft*, § 6.

hazard the assertion that it enables us to dispense with the necessity of assuming that there has been an author of the work that we admire; we may exaggerate as much as we like our own merit as percipients of its beauty, and may persuade ourselves that it is we who show favour to the work by admiring it, instead of its doing any favour to us; but all the time we know perfectly well that the idea which our mind perceives, as it is embodied in the object, could not be thus embodied there unless it existed previously in the mind of the poet, or painter, or sculptor.

Kant of course, not being an automatist, held this as strongly as any one else, and, in applying his principle of the ideality of the design in beauty to beautiful Art (whilst he maintains that here also the pleasure must come through æsthetic ideas, and must not depend upon the attainment of distinct aims, like mechanical deliberate Art), he now no longer dwells on the importance of what is contributed by the mind of the perceiver, but on the fact that the cause in the mind of the

author is rather genius working through æsthetic ideas than the understanding working through knowledge. But even his statement that the pleasure does not depend upon the attainment of distinct aims cannot be allowed to remain without qualification. There is one aim which must have been attained before the resulting pleasure can arise in the mind of the spectator, namely, the aim of the designer to embody his idea in his work. This is admitted by Kant in another place. "Genius," he says, "can only furnish rich material for products of beautiful Art; its execution and form demand cultivated talent, in order to make such a use of this material as will bear examination by the judgment." *

That materials in Nature are thus fashioned, we have but to open our eyes to see; and though Kant is unwilling to entertain, as an explanation

* Das Genie kann nur reichen Stoff zu Producten der schönen Kunst hergeben; die Verarbeitung desselben und die Form erfordert ein durch die Schule gebildetes Talent, um einen gebrauch davon zu machen, der vor der Urtheilskraft bestehen kann."—*Kritik der Urtheilskraft*, § 47.

of this beauty of Nature, the agency of the only cause which is known to us in our experience as capable of accounting for the presence of beauty in an object, he nevertheless, in the very act of rejecting this explanation, asserts that natural beauty has a cause external to ourselves, though he maintains its mechanical nature, for he ascribes the production of beautiful forms to a "mechanical tendency of Nature," which is certainly external to us. While, however, this tendency is described as mechanical, the object to which it tends is the production of beauty, which Kant himself defines as the *expression* of æsthetical ideas.* We are thus confronted with the paradox of a mechanical cause steadily and constantly working for an ideal result. Du Bois-Reymond's remark about the apparent purpose in Nature will apply with full force here. "Laws," he says, "working in such a way as this, are inconsistent with the mechanical view

* Man kann überhaupt Schönheit (sie mag Natur- oder Kunstschönheit sein), den AUSDRUCK ästhetischer Ideen nennen.—*Kritik der Urtheilskraft*, § 51.

of Nature." * In the matter which Du Bois-Reymond was considering when he spoke these words, we have seen that the doctrine of the survival of the fittest by Natural Selection was the only way of escape which presented itself to him from the dilemma, between absolute Pyrrhonism and the recognition of Design in that department of Nature; and as this theory cannot possibly be made available here, the choice between the two alternatives becomes inevitable. We must further remember that, when Du Bois-Reymond contemplated Pyrrhonism as an alternative for the recognition of Design, he did so because he consistently denied the will to be a cause of any movement in the brain or in the muscles of man as well as everywhere else in Nature; whereas Kant admits Design as a cause of a very large number of phenomena which present the same characteristic of beauty. It can scarcely be a tenable proposition, that we ought to prefer Pyrrhonism to admitting the action in a wider

* "So wirkende Gesetze sind also mit der mechanischen Naturansicht unverträglich."—*Die Sieben Welträthsel*, § 78.

sphere of a cause whose agency has already been recognised.

While Kant admitted that for the Beauty of Nature we are obliged to seek a cause external to ourselves, he emphatically denied that any external cause is required for the Sublime in Nature. The sole cause of the latter, according to him, is to be found in ourselves and in our way of thinking;* the sublime is shapeless or deformed;† and it is an improper way of expressing ourselves when we call any object of Nature sublime.‡

In his theory the feeling of the sublime is derived from a sensation of pain caused by the inability of our power of imagination to form an estimate of some object, and then from a

* "Zum Schönen der Natur müssen wir einen Grund ausser uns suchen, zum Erhabenen aber bloss in uns und der Denkungsart, die in die Vorstellung der ersteren Erhabenheit hineinbringt."—*Kritik der Urtheilskraft*, § 23.

† "Formlos oder ungestalt."—*Ibid.*, § 30.

‡ "Man sieht aber hieraus sofort, dass wir uns überhaupt unrichtig ausdrücken, wenn wir irgend einen *Gegenstand der Natur* erhaben nennen, ob wir zwar ganz richtig sehr viele derselben schön nennen können."—*Ibid.*, § 23.

superinduced sensation of pleasure at the proof thus given of the disproportion between the greatest power of sense-perception, and the ideas of the reason ; the object which we call sublime simply furnishing the occasion for this play of the powers of our imagination and reason.

He divides the sublime into the "mathematically sublime," and the "dynamically sublime"; the characteristic feature of the former being either vastness or number; and of the latter, power. With regard to the former, he reminds us that there is no object in Nature, however great we may esteem it, which is not small in relation to something else ; and similarly nothing so small that it may not be compared with other possible objects, in comparison with which it will assume the proportion of a world. The telescope furnishes us with rich material for illustrating the former remark, and the microscope for the latter. Therefore no object of Nature can on this ground be called sublime, for the sublime must be absolutely and not merely relatively great.

Comparative greatness, however, though not sublime in itself, may furnish the occasion for awaking in us the idea of the sublime, when it exceeds the power of our imagination to grasp it. Instances of this kind of sublimity are, he continues,* furnished by the cases in which the imagination is given successively larger units as measures for a continually increasing vastness. Thus, a tree, which we esteem vast compared with the height of a man, furnishes us with a measure for a mountain; and if this latter be a mile high, it serves as a unit for estimating the diameter of the earth; this, in turn, may be used as a unit for the Solar System, and this again for the Milky Way, which perhaps, in turn, may form a unit for still vaster systems; nor is it possible to arrive at a final limit.† The sublimity here, he says, consists, not in the greatness of the numbers, but in the revelation that everything in Nature may be represented as small compared with the ideas of the reason.

In the dynamically great, he observes that

* *Kritik der Urtheilskraft*, § 25. † *Ibid.*, § 26.

it is necessary that the object be capable of inspiring fear, and that it should impress us with a sense of the inadequacy of our power to resist it. Whilst, however, it thus reveals to us our physical weakness, it awakens in us a power to regard as little all for which we are naturally anxious—goods, health, and life. Thus Nature is here called sublime, because it exalts the imagination to the representation of circumstances in which the mind can become conscious of the proper sublimity of its determination even over Nature.

Kant refers in terms of high commendation to Burke's well-known treatise on *The Sublime and Beautiful*, the theory propounded in which has many points of agreement with his own. Burke's theory may be thus stated in his own words:* "The passions which belong to self-preservation turn on pain and danger; they are simply painful when their causes immediately

* *A Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful*, by the Right Hon. Edmund Burke. Part I. Sect. 18.

affect us; they are delightful when we have an idea of pain and danger, without being actually in such circumstances; this delight I have not called pleasure, because it turns on pain, and because it is different from any idea of positive pleasure. Whatever excites this delight I call *sublime*." And again he says, "Terror is, in all cases whatsoever, either more openly or latently, the ruling principle of the sublime." *

In connection with this ruling principle, he enumerates as causes of the feeling of the sublime, obscurity (which seems, he remarks, in general to be necessary to make anything terrible), privation, power, vastness, infinity, etc. In all cases he holds that the sublime is founded on pain, as beauty is founded on pleasure.

Kant, in like manner, held that the first origin of the sublime is a feeling of pain, and that the external occasion for its manifestation is not the order but the disorder of Nature; and he considered that he had here sufficient proof that sublimity has no objective external cause, as

* *Ibid.*, Part II. Sect. 2.

beauty has. Thus, after speaking of the likeness to art which may be observed in the beauty of Nature, he goes on to say *: "But in that which we are accustomed to call sublime there is so far from being anything which exhibits special objective principles, and these regular forms of nature, that it for the most part excites the idea of the sublime much more in its chaos, or in its wildest, most lawless disorder and desolation, if only vastness and power appear there." "Who," he says again, † "would wish to call sublime misshapen mountain masses, heaped upon one another with their ice pyramids, or the dark raging sea?" From these and other similar illustrations from Nature, such as thunder-clouds, high waterfalls, and lofty cliffs, he concludes that the sublime is in nothing of Nature, but only in our spirit.

Now, in our examination of this theory of the sublime, we may fully agree with Kant in holding that properly speaking sublimity belongs to the spirit and to the ideas of the mind, and

* *Kritik der Urtheilskraft*, § 23. † *Ibid.*, § 23.

not to material objects in themselves, while totally dissenting from his assumption that it has no objective being and exists only in the mind of the percipient, or subject. When he himself speaks of the sublimity of fortitude, and says that the object of the highest admiration, even for the savage, is a man who never quails or fears, who flinches not from peril, but with calm deliberation goes vigorously to work, the sublimity which he thus describes is perceived by the savage as something external to himself. No doubt he could not perceive it if he himself had no capacity for the sublime; but still he is not admiring his own sublimity, but that of the hero. The same principle holds good about all the noble qualities of the soul; the more unconscious their possessor is of them the better. They are to be discerned by those to whom he manifests them by word and act; and to them they are objective, and the manifestations of them have an objective cause which is external to the beholder.

Among things which may be accounted sub-

lime Kant especially singles out conformity to law, in conduct arising from a principle of duty ; * and elsewhere he often dwells on the sublimity of morality ; as, for instance, when he complains that the addition of lower motives destroys its sublimity. † Now the analogy of moral conduct, when it excites in an observer a sense of the sublime, does not seem to corroborate Kant's assertion that the external occasion of this feeling in the mind of the subject, or percipient, is generally the disorder and lawlessness of Nature. Nor is this merely an exceptional instance of order as a cause of the sublime. Kant himself remarks that stormy agitations of the spirit which leave no good result behind them, can by no means lay claim to the honour of sublimity ; and he remarks that even war is sublime by reason of the warlike virtues which it develops, and that its sublimity is increased when it is carried on

* *Kritik der Urtheilskraft*, § 29.

† *Fundamental Principles of the Metaphysic of Morals.* Abbott's Translation, p. 61.

with order and with respect for the rights of citizens. And similarly that the sublimity of the character of the warrior is heightened by his combining with his bravery, gentleness, and compassion, and even a becoming caution.

In connection with the fact that here it is plainly order, not disorder, which is the ruling principle of the sublime, it is noteworthy that the language of Kant, in speaking of the relation of beauty and sublimity to moral goodness, exhibits a remarkable modification of the sharp contrast which he elsewhere insists on as existing between the beautiful and the sublime. In this connection he speaks of them more than once, as if they had so many points of resemblance that there might be a reasonable doubt with which of them goodness of this kind should be classed. Thus he says that the morally good, when judged æsthetically, must be represented much rather as sublime than as beautiful;* and a little before this he

* Nicht sowohl schön als vielmehr erhaben vorgestellt werden müsse. *Kritik der Urtheilskraft*, § 29. B. 5. S. 279, 280. Hartenstein's Edition.

speaks of action inspired by a sense of duty, "as æsthetical, that is as sublime, or as beautiful"; * as if either classification would be legitimate. At the same time it was indispensable for Kant's theory that the impression of sublimity which high moral principle excites in us should be shown to be in accordance with his doctrine that sublimity gives pleasure only through pain, or by occasioning a momentary feeling of obstructed vitality, and his explanation is as follows:— "The power of the Moral Law makes itself cognoscible for us only through sacrifices (which, causing a feeling of deprivation, though it is on behalf of the inner freedom, in return discloses in us an unfathomable depth of this supersensuous power with consequences extending beyond our ken); thus the pleasure on the æsthetical side (in relation to sense) is negative, *i.e.*, against this interest, but regarded from the intellectual side it is positive and connected with an interest." †

* Die Gesetzmässigkeit der Handlung aus Pflicht zugleich als ästhetisch, d.i. als erhaben, oder auch als schön vorstellig zu machen, ohne an seiner Reinigkeit einzubüssen. § 29. S. 275.

† *Kritik der Urtheilskraft.* § 29. B. v. S. 279.

In the foregoing passage, Kant appears to confine his explanation to cases in which the moral law itself awakens in us a sense of the sublime, without taking into account those much more frequent cases in which heroic conduct in accordance with its principle excites this feeling. In a case of the latter kind the necessary deprivations are suffered and the hindrances overcome, not by us, but by the hero whose actions and whose spirit we regard as sublime. Here, at least, the sublimity is in the object rather than in the subject, so that the reverence which he inspires in us has not originated in an intellectual blunder, which leads us to transfer to the author of the heroic acts admiration that should have been bestowed upon ourselves. The external occasion, too, of the feeling of the sublime of which we are here conscious, is as far as possible removed from "chaos in its wildest, most lawless disorder." It may indeed be urged, that the disorder is represented here by the difficulty and opposition with which the man is contending; but even so, it is not the opposition which we regard as

sublime, but the man who is contending with it; not the disorder, but the power of order external to ourselves which is overcoming it.

When we thus contemplate a manifestation of character in which the spirit of a man is revealing itself to us by words, or acts, or looks, or tones of voice, the spirit does not manifest itself to any one of our senses; what we see and hear is only matter in motion. Nevertheless in cases of this kind the cause appears to us to be so immediately revealed that we attribute the sublimity altogether to it, and not to its manifestations; and in this respect the attitude of our minds is different from that with which we regard natural objects.

But the minds of our fellow-men can also affect us in this way, through what we often call their creative power. By almost every branch of art by which the creative genius of man can embody ideas in such a manner that the work shall impart a sense of beauty to the mind of a spectator, it is possible for creative genius also to impart the sense of the sublime. The mind, which is the

agent here, is itself invisible to us. Its idea is embodied in the form which it has given to matter; and in that matter, contemplated from the standpoint of physical science, there is no sublimity, any more than in natural objects. Nevertheless we are conscious that these collocations of matter are so moulded as to possess for our spirit the ideal characteristic of sublimity; and we feel an undoubting certainty that this characteristic has had an objective cause external to us. The various modes in which this manifestation is made may at first sight appear so utterly diverse in their nature as to make it impossible that there can be any resemblance between their respective results, other than a merely figurative one; yet, in a poem, a painting, a piece of music, and a great architectural work, we may be conscious that we are confronted with the same ideal characteristics, and may be persuaded that the likeness in the effects results from a likeness in the causes, the spirit, and the ideas of our fellow-men; though the very existence of those causes is known to us solely

by inference, that is by analogy from the working of our own mind; of which alone we are directly conscious.

Now, however indisposed we may be to extend the same inference to departments of nature which are outside the agency of man, we cannot help being conscious that the ideal characteristics of beauty and sublimity which we observe there, are the very same which present themselves to us in these various works of man; there is the same contrast between the beautiful and the sublime, and the same effect produced in the percipient mind by each respectively. We visit, for instance, some scene of exquisite loveliness in nature, and then passing on, after a short interval, we find ourselves gazing upon its solemn grandeur displayed in snow-clad mountains and towering cliffs; and we feel that we have experienced the contrast of the beautiful and the sublime. But at another time, surrounded by four walls, we take down a book from our shelf and read Milton's lament over Edward King.

"Bring the rathe primrose that forsaken dies,
The tufted crow-toe and pale jessamine,
The white pink, and the pansy freaked with jet,
The glowing violet,
The muskrose, and the well-attired woodbine,
With cowslips wan that hang the pensive head,
And every flower that sad embroidery wears;
Bid Amaranthus all his beauty shed,
And daffadillies fill their cups with tears
To strew the laureate hearse where Lycid lies."

And then we turn to another page and read a description of an ideal figure.

"shape,—
If shape it might be called that shape had none
Distinguishable in member, joint, or limb;
Or substance might be called that shadow seemed,
For each seemed either—black it stood as night,
Fierce as ten furies, terrible as Hell,
And shook a dreadful dart; what seemed his head
The likeness of a kingly crown had on."

And as we read we become conscious that we are experiencing again the same contrast as before; the contrast between the beautiful and the sublime.

While the characteristic of sublimity may from time to time be met with in architecture, in painting, in sculpture, in music, and in poetry,

we learn by experience that in no department of art or literature does it ever make its appearance unless there have been certain mental characteristics in the artist or the author. Mere lawlessness and violence will not originate it. An incompetent author may kill all his characters by violent deaths; he may revel in horrors, may describe the hugest forms and the stormiest passions; and when he has done all this, there may not be one trait of sublimity in his work from its first line to its last. Yet, if there be truth in the theory that it is the spectator who does all the idealising work in his contemplation of the sublime, it is hard to see why such an author might not retort the charge of failure on his critics, and say, Have not I given you the material for a judgment of the sublime, in furnishing images of vastness and of force? It is now your business to idealise them; and if you have not done so, the fault is yours, not mine. Such an excuse would be, of course, rejected, not merely because we will not be at the pains to do this, but because we cannot do it. The author or artist must himself perform

this idealising process and present its result in his work; for, unless there be a subtle principle of order and of harmony, underlying those features which startle by their abruptness, and harmonising those strong contrasts, the result produced in any work of man may be horrible, or may be merely grotesque; but sublime it can never be.

Are we then to suppose that this rule ceases to apply the moment we approach the consideration of the sublime in nature—that here reason forbids us to seek an external cause for the sublime, though, in all the various departments that we have been considering, the mind is compelled to seek an external cause for the existence of the sublime quite as much as for that of the beautiful; and that here mere chaos in its wildest, most lawless disorder and desolation can impress us with the feeling of sublimity, if only vastness and power be apparent; though in those other cases mere chaos is found to be as little competent to supply us with the external occasion of the feeling of sublimity as it is for that of beauty; and though

it is admitted (by all except those who deny the agency of human design and will altogether) that in all those cases the cause has been an idea which had previously existed in a mind external to us, the observers?

If this is so; if the sense of sublimity excited in us by nature has its origin in a feeling of pain caused by mere disorder and chaos, while that of beauty originates from a feeling of pleasure caused by order and harmony, the opposition between the two characteristics should here be distinct and unmistakable. Now Kant has recorded, in the Conclusion of his work on the Practical Reason, that the starry heaven was the one object of external nature which filled his mind with ever new and increasing admiration and awe, the oftener and the more steadily he reflected on it; and most people, I think, who have a strong sense of the sublime, would agree that this is its highest manifestation in the visible universe; yet at the same time most men would agree that it may also be described as surpassingly beautiful. Those who have witnessed it on a clear night from some

continent in the tropics—where there are fewer mists, and where, therefore, more stars are visible than are ever seen in our latitudes, and where from the same cause the constellations blaze with greater splendour—tell us that the feeling of sublimity is thereby increased, while they also describe the midnight sky in those regions as more, instead of less beautiful than ours. Or if we consider the case of the polar heaven when the northern lights are flashing in all their brilliance, the effect might be variously described as sublime or beautiful, according as awe or delight preponderated in the mind of the observer; so that we have here a parallel to the varying impression produced by the morally good, which Kant himself (as we have seen) characterised "as sublime or as beautiful." Burke anticipated the objection which might be derived from objects like these against his theory of the opposite and contradictory nature of beauty and sublimity; and he endeavoured to meet it by asking,—

> "If black and white blend, soften, and unite
> A thousand ways, are there no black or white?"

"If," he continues, "the qualities of the sublime and beautiful are sometimes found united, does this prove that they are the same; does it prove that they are in any way allied; does it prove even that they are not opposite and contradictory? Black and white may soften, may blend; but they are not therefore the same." *

The foregoing argument could only be employed to explain cases in which the qualities of beauty and sublimity, though found in the same object, were by reason of their combination less able to produce the characteristic effect of either; as gray in all its shades affects us less vividly than black or white, while an object of this colour would certainly never be selected as a conspicuous instance of the impression which dazzling whiteness can produce. Indeed, Burke himself, immediately after the remarks that I have quoted, adds these words: "Nor, when they are so softened and blended with each other,

* *A Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful.* By the Right Hon. Edmund Burke. Par. iii. Sect. xxvii.

or with different colours, is the power of black as black, or of white as white, so strong as when each stands uniform and distinguished."

This is a necessary result of the combination of opposites. If they blend they must "soften," or, in other words, weaken each other; and any two qualities which can blend without doing this are not opposites. Beauty and sublimity may be combined in the same object, with the result of enhancing the effect instead of weakening it, because they are not really opposites; but to attempt to combine in the same object beauty and ugliness, or sublimity and meanness, would be to weaken or destroy the beauty or the sublimity; for ugliness is the true "opposite or contradictory" of beauty, and meanness of sublimity.

A single instance of an object which possesses in a high degree the characteristics, at once, of beauty and of sublimity would be fatal to the theory that their nature is contradictory; but in truth there are many of the very objects which are brought forward by Kant as establishing

their contradictory character which strikingly exhibit beauty, while sublimity is their chief characteristic. He refers, for instance, with aversion to mountain masses with their ice-pyramids; yet these ice-pyramids are surpassingly beautiful, and so are the colours on the sides and peaks of the mountain range. Similarly he speaks of the dark raging sea; yet here also the sublimity is enhanced by beauty of colour and of movement.

Kant's belief that shades of colour are not to be classed as beautiful had an important connection with his theory of the sublime. All beauty, he said, consists in form, or movement; and, as he held that colour is not derived from either, he refused to attribute to it beauty, describing it merely as agreeable; nor would he even admit that it contributed to beauty except so far as it rendered more vivid the impression produced by beautiful form.* It followed therefore from his definition of the sublime as the formless, that it not only could have no com-

* Cf. *Kritik der Urtheilskraft*, § 14.

munity of nature with beauty, but must be of a contradictory character.

He admitted, at the same time, that if we were to agree with Euler, that colour is caused by the undulations of the luminiferous æther, its claim to rank as beautiful could no longer be rejected, for it would thus be shown to result from harmonious movement. This doctrine, which he regarded with much incredulity, is now part of the accepted creed of science, and in relation to this subject it has far-reaching consequences. It shows that the cause of the beauty of distant objects is not negative, but positive, giving a new meaning to the problem which Campbell raised and supposed that he explained in the opening lines of his *Pleasures of Hope.*

> "Why do those cliffs of shadowy tints appear
> More sweet than all the landscape smiling near?
> 'Tis distance lends enchantment to the view,
> And robes the mountain in its azure hue."

Campbell would no doubt have been much disconcerted, could he have foreseen that one of his lines—

> "'Tis distance lends enchantment to the view,"—

will probably, so long as the English language lasts, be used as a very cynical and very unpoetical proverb. Yet this might have been apprehended; for the idea here expressed is the essentially cynical one, that the beauty of the distant view arises solely from our not seeing it clearly. The truth of nature in this matter is not cynical. In the variety, yet harmony, of the play of the æthereal undulations acting on the properties of air as well as on the mountain sides and peaks, we have causes given us for this beauty—causes to which distance lends nothing but space in which to display the magic of their enchantment.

Science in the present day is leading us, by these discoveries, beyond the limits of the field of observation in which are found those instances of adaptation which have often excited the wonder of the greatest students of nature in all ages; and, in the new region which she thus opens to the human mind, she seems to be revealing to us the secret, that things which we looked upon as matters of course, requiring no

explanation, and appearing to suggest no need of any special cause, are the products of adaptations more marvellous than anything which had been hitherto known to man. She tells us of an innumerable number of æthereal waves, filling the immensity of space, in comparison with which the sands upon the sea-shore are few in number; travelling ceaselessly onward at the rate of one hundred and eighty-six thousand miles a second, but each of them producing in that second of time a number of vibrations which must be reckoned, not by hundreds of thousands, but by hundreds of millions of millions; crossing and recrossing, yet without confusion or disorder, and combining to produce the wondrous effects which we behold, not only in the rainbow and the sunset, but in a thousand hues on earth. We have seen that, so far as our experience reaches, the chances everywhere so greatly predominate against the occurrence of any combination which shall produce a result exhibiting the ideal characteristic of beauty or sublimity, that without the operation of Design selecting out of a multi-

tude of possible combinations those which are adapted for the required result, neither beauty nor sublimity is ever achieved; and, as might be expected, with every increase of the complexity and number of the combinations, the difficulty of the task of the designer always increases; yet here we have combinations which, in their number and complexity, seem to mock our utmost power of numeration, producing an harmonious result of glory and beauty.

Though no human intelligence can approach the full meaning of these facts, and though their very existence was till a recent period unknown, yet their ordered result in a Cosmos to which no limits can, in any direction, be set, is the object which is contemplated by man's mind when it feels the sublimity of the universe. To take the illustration suggested by Kant, when he calls our attention to the way in which a sense of what he calls "the mathematically sublime" is experienced by the mind as it employs new units of measurement for greater and still greater objects of contemplation; the height of a man

as a unit for the measurement of a mountain, the altitude of the mountain for the measurement of the earth, the earth's diameter for the solar system, and that in turn for the Galaxy, or Milky Way; if the process of thought thus described revealed to us vastness only, there would be unanswerable force in his argument that there is nothing really sublime in nature, because all size is merely comparative. It is not, however, mere vastness which is thus disclosed, but the vastness of an ordered system; a Cosmos whose greatness the mind is unable to grasp, but which it can certainly perceive to be a Cosmos. For the telescope which penetrates the depths of space, and the microscope which discloses objects that had been invisible from their minuteness, excite in us ever fresh wonder and awe, just because they reveal ever new developments of order and beauty. If, beyond the limits of the vision of the unassisted eye, the microscope could show us neither beauty, nor adaptation, nor order, but a mere monotony of chaos, it would certainly not increase our sense

of the sublimity of nature. Or, if we were surrounded by such an universe as Tyndall says might exist in the absence of the æthereal undulations—an universe in which dark suns might burn, and metals be fused in invisible fires; where a sentient being, on approaching one of those rayless furnaces, could be conscious of no augmentation of temperature, and actual contact would first reveal its heat.* Such an universe would be far removed from a chaos (for chaos could give nothing whatsoever for the mind to contemplate), but if this and this only surrounded us on every side, and we were in some way made cognisant of it, the thought of its existence would fill us with a sense of oppression and horror, rather than with any feeling of sublimity.

But, as the universe in which we find ourselves is constituted, the proof of Design, which is furnished by the characteristics of beauty and sublimity that are apparent in it, is not derived from phenomena few in number, or requiring to

* Cf. *Fragments of Science*, vol. i., pp. 4, 5.

be sought out by ingenuity. Many of those who are most bitterly opposed to the doctrine to which the existence of these characteristics appears to point, nevertheless vie with those who hold it in admiration of the startling profusion of splendour with which nature abounds. The turf beneath our feet is variegated with flowers of an endless variety of shape and hue; everywhere around us, in meadow and grove, there is beauty in lavish abundance. Above us, if the day be clear, is the blue vault of heaven, flooded with glorious light, which, when the sun has reached the West, often becomes the scene of a panorama in which crimson and gold are blended with a thousand hues for which even a painter has no names; yet every hue is beautiful. Then, when that splendour is past, the scene changes to something so different, that if we did not know what was coming, we should gaze at it breathless with surprise. The new magnificence is so utterly diverse from that which preceded it, that to compare the two might seem almost impossible; yet, I think, most of us

would say that there is a grandeur here which surpasses that of the hues of the sunset. Even if we exclude—as Kant says we must carefully do*—all thought of the suns, each possibly the centre of a system of worlds, which in the immensity of space make up that "dust of gold" in the Galaxy extending above our heads, and rigidly confine ourselves to a pure judgment of their beauty as they appear to the eye—even then we shall not, I think, be disposed to attribute any exaggeration of feeling to the awe-struck exclamation of the Psalmist, "When I consider Thy heavens, the work of Thy fingers, the moon and stars which Thou hast ordained; what is man that Thou art mindful of him?"

It is in our highest and best moments that

* Wenn man also den Anblick des bestirnten Himmels *erhaben* nennt, so muss man der Beurtheilung desselben nicht Begriffe von welten, durch vernünftige Wesen bewohnt, und nun die hellen Punkte, womit wir den Raum über uns erfüllt sehen, als ihre sonnen in sehr zweckmässig für sie gestellten Kreisen bewegt, zum Grunde legen, sondern blos, wie man ihn sieht, als ein weites Gewölbe, das Alles befasst; und blos unter dieser Vorstellung müssen wir die Erhabenheit setzen, die ein reines ästhetisches Urtheil diesem Gegestande beilegt.—*Kritik der Urtheilskraft*, § 29.

this splendour of the earth and sky is most vividly felt by us to claim our wonder and reverence. And, that this is not a result of illusion on our part, nor this reverence lavished merely upon chance combinations of atoms clashing aimlessly together, appears (as we have already seen) to be suggested to us by the fact, that, though the physical laws of the world operate in full force in our nerves and muscles, and in the movements which they originate, and though (like everything else in nature) all our buildings and works of art are necessarily constructed in conformity with these laws, there never is any tendency to beauty or sublimity displayed in any one of them unless a great idea has originated and guided the work. This cause is made known to us by experience as adequate to produce these characteristics; and where it is absent they are absent too.

LECTURE V.

DETERMINISM AND THE WILL.

"*They shew the work of the law written in their hearts, their conscience bearing witness therewith, and their thoughts one with another accusing or else excusing them.*"
—ROM. ii. 15. (*R.V.*)

LECTURE V.

DETERMINISM AND THE WILL.

WE have hitherto been engaged in discussing problems which have been represented as affecting that tenet of Natural Religion which is assumed in the former part of Butler's well-known Postulate; I mean, of course, the doctrine that there is an Intelligent Author of Nature. We have now to consider the bearing of some theories of Modern Thought on the latter part of this Postulate; which asserts the existence of a Natural Governor of the world.

We are constantly assured by writers who claim to speak with authority, that in this branch of our subject also, the old arguments and the old methods, which in Bishop Butler's day were regarded as efficacious, are altogether out of date; and that the ancient controversies about human responsibility, conscience, and free will, which for ages have been waged without

decisive result, have received a new direction from some recent conclusions of Physical Science, so that matters which in the last century were looked upon as open questions cannot properly be so regarded now.

In dealing with objections to the doctrine of God's Moral Government based upon the principle of Fatalism, Butler was first of all careful to show that this principle cannot exclude the action of Design. For a Fatalist would agree with a believer in Free Agency, that houses are built by architects, the only question between them being whether the architects built them necessarily or freely. Abstract notions can do nothing, and Necessity as much requires and supposes a Necessary Agent, as Freedom requires and supposes a Free Agent, to be the former of the world.

Under the constitution of things in the world, which must thus be recognised as originated by God, we find that we are as if we were free and responsible; and that any attempt at applying the system of Necessity, always misleads us, and

cannot but mislead us in a most dreadful manner. We are thus taught by experience that the notion of Necessity, even if it were true, is not applicable to practical subjects; and Religion is a practical subject. He calls our attention to the fact that the Author of Nature governs the world by the method of rewards and punishments (as is shown by the natural tendencies of virtue and of vice), and that He has also given us a moral faculty by which we distinguish between actions, and approve some as virtuous and of good desert, and disapprove others as vicious and of ill desert; and that this moral discernment carries in it such authority, that we cannot depart from it without being self-condemned. His conclusion being that, if the system of the world be one of necessity, it must be a necessity which is compatible with these facts; if it be not so, it is a contradiction to the whole constitution of nature, and to what we every moment experience in ourselves, and so overturns everything.

Now, opponents of Theism in the present day, besides disputing Butler's assumption that the

agency of Design was requisite to produce the world, allege that such an argument as that which he employed is now completely antiquated, and that modern science has changed the whole aspect of this controversy (I.) by enormously strengthening the proofs of the doctrine which in Butler's day was called Fatalism, but in ours is generally styled Determinism; (II.) and also by making known to us the history of the genesis and development of the Moral Sentiment, which was one of the facts in the existing constitution of things on which his argument depended.

I. According to them, the doctrine of Determinism is not a mere metaphysical speculation, as Bishop Butler supposed it to be, but rests upon an immense number of co-ordinated observations of science, whose result is formulated in the doctrines of the conservation of Energy, and of the universality of natural law; so that it is supported by a basis of solid fact which renders it unassailable.

It might naturally be supposed from these frequent appeals to the authority of Physical

Science in questions of Moral Philosophy or Psychology, that those who make them do not admit the agency of any force but those which Physical Science takes cognisance of. This supposition, however, would be an erroneous one. The theory with which we are here confronted is not that which denies to anything mental or spiritual the power of influencing the order of Nature, and which is consequently obliged to explain all our bodily movements as resulting from automatic action. The employment of this principle in order to shake men's conviction that they have the power of choosing between right and wrong, would not constitute a very formidable attack upon the doctrine thus assailed; for an objector of this school must equally and in the same sense deny that there is any power in man's will to construct railways, or to work cotton mills, or to exercise the slightest influence over the movements of his own body.

It is, as a rule, in connection with the Divine Agency only that this doctrine of strict Materialism is pressed to its consequences. In every

serious attack upon man's belief in his own free agency, it is not a purely mechanical chain of causation which is alleged to produce his acts, but one in which many of the necessary links are composed of the mental motives which at each moment of action prove the strongest, and these motives determine the resulting act. Thus this doctrine escapes the extravagantly paradoxical consequences which hamper that of Automatism, while at the same time, its advocates claim the right to transfer to its credit the arguments respecting the conservation of force, and the inviolable order of Nature which appeared to support the more uncompromising theory that it has superseded. From this process of reasoning a cumulative proof is supposed to result, outweighing every opposing argument, and rendering necessary the acceptance of some rather startling consequences, which the advocates of Determinism do not deny that their theory involves.

Thus a reviewer * of a recent work, in which the

* *Westminster Review*, April, 1885. Review of Bishop Temple's Bampton Lectures on *The Relations between Religion and Science*.

author had pleaded that "in spite of all attempts to explain away our sense of freedom and responsibility, the fact that we think ourselves free and hold ourselves responsible remains, and remains unaffected"; disposes of this argument by the remark, "That is to say, the theory of Determinism, though it affirms the illusion of Free Will, does not explain to us how the illusion comes to exist." In the same review he admits that this doctrine furnishes no explanation or justification of the feeling of obligation expressed by the word "ought" in connection with certain actions, and that it makes it difficult to say why we should give a different kind of approval or disapproval to a man from that which we give to a machine, though, as he rather naively remarks, "when we praise a man for a good action, the sentiment in our minds does seem different in kind from that with which we regard a machine that is working well." He also frankly acknowledges that the theory which he advocates allows no justification of the feelings of repentance and remorse. Yet, at the same time, he assures us that, "however

these difficulties may be solved, Determinism can abate nothing of its claims; no room can be found for any exception to the universal law of causation."

Whilst the advocates of Determinism are thus confident and dogmatic, moral philosophers like Professor Sidgwick, who still appear to suspend their judgment on this matter, at the same time assert it to be their belief that the discoveries of Physical Science tend to establish the doctrine. The last-named writer declares that there is thus a cumulative argument in its favour so strong as almost to amount to complete proof. "Step by step," he says, "in successive departments of fact conflicting modes of thought have receded and faded, until at length they have vanished everywhere except from the mysterious citadel of Will. Everywhere else the belief is so firmly established that some declare its opposite to be inconceivable; others even maintain that it always was so. Every scientific procedure assumes it; each success of science confirms it."* He remarks that

* *Methods of Ethics*, Book I., chap. v.

with the increasing conviction of the essential unity of the cognisable universe, there is an increasing indisposition to allow the exceptional character claimed by Libertarians for the department of human action; and he adds, that of human action itself a large portion is originated unconsciously, and is therefore determined by purely physical causes; and that no clear line can be drawn between acts of this kind and those which are conscious and voluntary. With these arguments, derived from investigations belonging to the sphere of physical science, he combines the usual Determinist arguments concerning our inferences of the future actions of those whom we know from their past actions, and our habit of regarding our own acts, once they are past, as the effects of our nature, education, and circumstances. Against this formidable array of cumulative evidence there is, he tells us, but one opposing argument of real force: the immediate affirmation of consciousness in the moment of deliberate action.

Now, in order that we may not lose ourselves

in the wide regions of thought which this question opens up in different directions, we must remember that our controversy with Determinists solely refers to their rejection of the affirmation of our consciousness that we have sometimes the power of choosing between alternative principles of action, and of the verdict of our moral sense that we are responsible for the choice that we make. Our contention is, that the supposed cumulative evidence for the doctrine of Determinism does not justify this rejection ; and that, if this be so, it is unnecessary for us to ascertain whether the negative conclusion, for which evidence is thus seen to be wanting, follows necessarily from the theory or no ; since we are entitled to reject the unsupported conclusion, without being required to determine whether the fallacy lies in the reasoning by which it was deduced from the theory, or in that which was supposed to establish the theory itself.

It is almost universally assumed by writers of this school that this conclusion is a necessary result of their theory, and that Determinism must

more or less modify our judgments about right and wrong, merit, and responsibility; and this assumption is apparent even in the cautious statement of the case by Professor Sidgwick, who aims at dispelling the fear that momentous practical consequences must logically ensue from the adoption of Libertarianism or Determinism, and is careful to point out that "the Determinist can give to the fundamental terms of ethics perfectly clear and definite meanings, and that the distinctions thus obtained give us a practically sufficient basis for criminal law." Whilst showing this anxiety to guard against any exaggeration of the importance of the results of this controversy, nevertheless, towards the close of the chapter which he devotes to this question, he adds that "if there be no free choice there does not seem to be strictly speaking any desert, so that justice has to be determined on a different principle." He substantially agrees with the advocates of Determinism in holding that, if that doctrine be true, punishment and reward can no longer be regarded as the requital of good and ill desert, but

as precautionary measures adopted for the purpose of supplying the strongest motive for the avoidance of wrong actions in the future and the performance of right ones; and that the reason of our resenting voluntary harm rather than that which was involuntary, depends on the effect of the resentment, which obviously tends to prevent one kind of harm and not the other. He further anticipates the obvious reply, that however useful moral sentiments may be on this theory, its general adoption would practically prevent their development; and he meets this objection by the observation that, even if it were proved that it would be so, to conclude from the practical efficacy of the belief to its speculative truth, is to use a doubtful and now generally discredited method of inference. The very fact also that he weighs in opposite scales the cumulative evidence for Determinism and the immediate affirmation of consciousness in the moment of deliberate action,—and speaks of the latter as the one opposing argument of real force, against a cumulative argument so strong as almost to amount

to complete proof,—would seem to show that in his opinion, if the cumulative argument were much further strengthened it would amount to complete proof, and that then the opposing affirmation of consciousness must be pronounced to be an illusion.

The significance of the distinction between the negative and positive aspects of Determinism will appear when we recall to mind the antinomy, or apparent contradiction, which, as we have already seen, confronts us when we try to reconcile the belief that every movement of matter in the brain of man, as well as everywhere else in the universe of which it forms a part, is inevitably determined by previous movements of matter, and the belief in the agency of our will which appears to be derived from the direct affirmation of consciousness. If the chain of physical causation and the law of the Conservation of Energy admit a single exception anywhere, they appear to lose all their meaning; and if they can admit no exception, they seem to leave no chink open for the agency of man's will or of his so-called 'motives.' Yet in spite of

this apparent impossibility that Man's will can influence in any way the movements of his bodily frame, the system of Determinism which we are now considering teaches that our acts are determined by our will and our will by the motive which at the moment is the strongest. Determinists thus show that with regard to this problem they believe that it is the apparent impossibility of the will's agency which must be regarded as an illusion, and not the affirmation of our consciousness that our will can act on nature.

It is only by ignoring this essential difference that it is possible to regard the theory of the Determinism of our actions by the strongest motive as if it were merely a modification of materialistic Determinism, and a more cautious application of the same principle; so that any argument which appears to support the extreme theory may as a matter of course, and *à fortiori*, be employed to establish the more moderate one. If we inquire what it is that these theories respectively deny, it will at once become apparent that in their negative aspect at least the two doctrines do not

stand to each other in any such relation. The theory, which denies indeed that our will is *free*, but at the same time asserts that it possesses the power of influencing our actions, and maintains that those actions are in effect determined by the strongest motive present to our mind, is not a mere modification of that which asserts that nothing mental can influence our actions, but is a direct contradiction of it; and therefore before we assume that arguments which seem to support materialistic Determinism can be made available to prove the theory now before us, we must ascertain whether their support appears to be given to something in the former theory which is common to it with the latter, or to that in which it contradicts it.

It may reasonably be assumed that the arguments of this kind selected by Professor Sidgwick in order to show the strength of "the formidable array of cumulative evidence offered for Determinism" are some of the strongest that can be urged in its support, so that it may be well briefly to consider them in this connection. He commences by calling our attention to the fact that all

events except our volitions are regarded by all competent persons as being "determinately related to the state of things immediately preceding them," and he then proceeds to show * that "when we fix our attention on human action we find that a large portion of it is originated unconsciously, and is therefore admittedly determined by physical causes; and we find that no clear line can be drawn between acts of this kind and those which are conscious and voluntary. Not only are many acts of the former class entirely similar to those of the latter, except in being unconscious; but we remark further that actions that we habitually perform, continually pass from the latter class into the former: and the further we investigate the more the conclusion is forced upon us, that there is no kind of action originated by conscious volition which cannot under certain circumstances be originated unconsciously."

That the paragraph last quoted appears to favour the materialistic theory of Determinism is obvious enough. It contains arguments which are sub-

* *Methods of Ethics*, p. 52.

stantially identical with some of those from which Descartes deduced his theory that the lower animals are automata, and from which many modern writers have drawn a similar conclusion about Man. Its tendency is to suggest, that as purely physical causes can account for actions exactly similar to those which we attribute to our will, and as it is impossible to draw a "clear line" between the two classes of actions, physical causes may account for all our acts. As Mr. Fiske would express it, "the dynamic circuit is absolutely complete without taking psychical manifestations into the account at all."* The conclusion thus suggested is precisely that part of the doctrine of Automatism which directly contradicts ordinary Determinism; for, instead of firmly establishing the power of motives to determine our will and through it our actions, it leaves no room for them to determine anything, attributing everything that happens to purely physical causes.

But it may be urged that the opening part of

* *Outlines of Cosmic Philosophy.* By John Fiske, M.A., LL.B. Vol. ii. p. 441.

Professor Sidgwick's argument does really support a principle which is common to both these theories. He there reminds us that in respect of all kinds of occurrences except human volitions the belief that events are determinately related to the state of things immediately preceding them is now held by all competent thinkers; and after referring to the fact that "not only are we finding ever new proof that events are cognisably determined, but also that the different modes of determination of different kinds of events are fundamentally identical and mutually dependent," he adds, "naturally with the increasing conviction of the essential unity of the cognisable universe increases the indisposition to allow the exceptional character claimed by Libertarians."

What is the problem which is here presented to us? It is this. The methods of Physical Science recognise no alternatives; each investigator who uses them assumes that from the action of any given force under given circumstances only one result is possible, and he has no hesitation in attributing any apparent alternative which he may

meet with in Nature to his ignorance of some of the antecedents. On the other hand, the assertion that we have the power of Free Will means that we have at times the power of determining alternatives, that we can do this or that; so that, whilst our designs, once they have been adopted by our will, form antecedents the occurrence of whose consequents we calculate on hour by hour and minute by minute, before we adopt those designs we may exercise a power of free agency, and adopt or disregard them as we will. In this way Libertarians claim that we not only have the power of directing our activity into a particular channel, under the influence of a motive present to the mind, but that we may also exercise a power to decide which of two motives shall be our rule of action.

There can be no doubt that the power thus claimed is, when contemplated from the standpoint of Physical Science, a power of an exceptional character; but this is not the only exceptional characteristic which (unless we decide on regarding the apparent verdicts of our conscious-

ness as illusory) we must attribute to the Will, and which Determinists actually do attribute to it. The power of working for an end, of moving and moulding matter under the guidance of a mental picture representing something which as yet has no existence in the physical universe, is as completely outside the scope of the methods of Physical Science as is the power of determining an alternative; yet Determinists do not allow its exceptional character to prevent them from recognising it. In the chain of mechanical causation with which Physical Science has to do, it is as difficult to find room for the agency of the Will as for its freedom. Of the two great series of events which Leibnitz regarded as independent of each other, though harmonizing with each other, it is the business of Physical Science to investigate one only. Its aim is, to trace the succession of antecedents and consequents in the physical series, and to seek to explain the present physical condition of the world as the consequent of its physical past, and the antecedent of its physical future, so that any explanation of the phenomenon that

it investigates which involves the agency of anything mental is for it no explanation at all. If therefore everything is to be rejected which appears exceptional from its point of view, this rule will as much exclude the agency of a will determined by motives as of a will which can itself determine the motive on which it will act; so that this argument also, whatever may be its weight, lends its support, not to ordinary Determinism, but to Automatism.

The main reliance of the advocates of Automatism or materialistic Determinism is, as we have seen, placed on the doctrine of the Conservation of Force, which teaches that the sum total of force in the universe is incapable of increase or diminution, and that no change or movement can be effected in any part of it and no new direction given to any of its forces without the expenditure of a definite amount of this constant quantity. This is a doctrine which would appear to be very ill adapted for the use of advocates of the theory of Determinism by motives; for it is only figuratively that motives can be spoken of as forces at

all. The love of money and the fear of disgrace, ambition, compassion, and the love of integrity cannot be regarded as forces able to raise a definite weight a definite height from the surface of the earth, like the force expended by the stroke of the bird's wing in the air, which Du Bois-Reymond spoke of as determining the fall of the avalanche;* so that it would appear that the "Conservation of Force" must deny to these so-called "motives" the power of determining anything.

Yet at the same time there is no doctrine propounded in the name of Science which is appealed to with more confidence by writers of this school, apparently without any suspicion occurring to them that there is any inconsistency in their arguments. Professor Graham, for instance, in his *Creed of Science*, thus emphatically repudiates the theory of Materialism†: "In a word, thought acts on the atoms as well as these on it. Thought

* Lecture II., p. 57.

† *The Creed of Science*, by William Graham, M.A., Professor of Jurisprudence and Political Economy, Queen's College, Belfast, p. 303.

remains an energy which can act not merely on our own cerebral atoms, but, what is more directly to our purpose, on the thoughts and acts and feelings of others. The law of the conservation of physical energy is not perhaps defeated; but it is inapplicable here. It is inapplicable, or it must receive a new extension. For physical energy is not all energy; there is spiritual energy also, however little the extreme materialist may be disposed to accept the fact. There is spiritual energy, which is conserved like the physical, but which, unlike it, is ever on the increase. The thoughts of great minds live after them, and, by producing ever new thought, are a constant and inexhaustible source of ever new energy."

In an earlier chapter of the same work, Professor Graham triumphantly appeals to this very law of the conservation of energy as a conclusive proof that the exercise of free will is impossible. After warning his readers that the admission of Free Will will carry with it the possibility of miracles, he thus continues: * "But Science

* *Ibid.*, pp. 134, 135.

cannot without self-destruction allow either the miracle in general or the special one of creation *ex nihilo;* and least of all can she allow that both take place within the theatre of man's breast in the production of something from nothing, as in the supposed exercise of a free uncaused will. Science explains the facts and phenomena of Nature from second causes, which are invariably, as Mill tells us, phenomenal causes. To do so is the business of Science. She is not concerned either with ontologic or with first causes; but the existence of a free-will, or ego, is either an ontologic cause with which Science is not concerned, or it is a phenomenal one for whose existence she finds no evidence, while it would contradict her two highest generalizations, the law of universal causation and the law of the conservation of energy."

If the law of the Conservation of Energy is elastic enough to be consistent with the existence of "a constant and inexhaustible source of ever new energy" flowing in upon the universe and acting on its atoms, it is difficult to see how it can

at the same time be rigid enough to exclude the possibility of miracle or the exercise of free-will.

The direction which this controversy has taken in the present century is in great measure owing to the influence which the growth and progress of Physical Science exercises at present over men's minds; and as this influence is likely to grow greater still in the near future, the inquiry into the real bearing upon this question of the reign of law which Science makes known to us as existing in the material universe cannot be regarded as an unimportant one.

We find in that universe a connected system of causation and law which appears to be universal; and all the modern discoveries of science and the fresh insight into nature which they give to man strengthen still further our belief in the reality of the connection there. We find in the second place that this connected chain of causation, looked at from the standpoint of Physical Science, appears to leave no chink open for any possible action of man's will on nature, and to demonstrate that his very body is nothing but a machine, over which

(to use Professor Huxley's illustration) his will has no more power than the sound of the bell of a clock has to direct the machinery of that clock. I have given in my Second Lecture some reasons for believing that, however strong the evidence for this doctrine may appear to be, the evidence for the causality of our wills is stronger still; but the point which I now desire specially to notice is, that the conclusion at least which my argument was intended to establish is adopted explicitly or implicitly by the whole school of Determinist writers. Mill, for instance, declares that our actions are determined by our will; and all must hold it at least implicitly, forming, as it does, the very starting-point for their argument. For before we can persuade ourselves that our conduct is necessarily determined by the influence of motives on our will, we must previously have come to the conclusion that our will does determine our conduct. Thus, by the practical confession of this very school of philosophy, while the universality of law in nature is real, the apparent impossibility of any action

of man's will on nature (which we should have supposed to be a necessary corollary) is illusory. The existence of a chain of mechanical antecedents and consequents and the power of the will to act must be reconciled in some wonderful way; though what that way is, the acutest wit of man cannot even conjecture.

Now, proceeding by means of the suggested analogical inference from the world of matter to the world of consciousness, we must conclude that if we could view all the phenomena of consciousness from a standpoint corresponding to that from which the man of science views nature, we should find in this world of consciousness a connected system of causation and of law, and that this connection would be a real one; we should find also that this connected system of causation would appear to leave no chink open for any possible action of the will in choosing between motives, as mechanical causation appeared to exclude the possibility of its having a power of choice between actions; and to complete the analogy, the apparent impossibility of the action of the will must be

illusory here, like its prototype in the world of matter. Whatever other objections there may be to the conclusions of Political Economy or of the Philosophy of History, the doctrine of Mechanical Necessity is never put forward as excluding the possibility of arriving at conclusions on these subjects, though both Political Economy and the Philosophy of History assume the power of the will to choose between actions. Similarly (according to this analogy), whatever other objections there may be to the conclusions of Moral Philosophy, the doctrine of Metaphysical Necessity cannot exclude the possibility of arriving at any conclusions on that subject, though Moral Philosophy assumes the power of the will to choose between motives.

II. The objection which I have been considering is, however, not the only one which is brought in the name of Physical Science against Moral Philosophy, as well as against the authority of Conscience, which held such a leading place in the philosophical system of Butler, and in his proof that there is a Moral Governor of the world.

Modern science is believed by many to have removed all mystery from the authoritative voice of Conscience, by discovering its origin and tracing its development, showing that it is simply a modification of the desire of pleasure and fear of pain which is a characteristic of every sentient being.

The conclusion which is thus supposed to be established by the doctrine of Development is indeed no new opinion, for, not to speak of more ancient writers, it had already, when Butler wrote, been propounded by Hobbes.* According to that philosopher, the influence which charity has over us consists in the gratification given by the sense of our own power when we find ourselves able, not only to accomplish our own desires, but also to assist other men in theirs. Pity is the imagination or fiction of future calamity to ourselves proceeding from the sense of another man's calamity; and the reason why we feel more pity when the sufferer is well deserving than when he is ill deserving, is, that in the former case we are more afraid that the same thing may happen to

* *Human Nature*, by Thomas Hobbes, chapter ix.

ourselves. When the explanations given of a doctrine by a man of Hobbes' great ability assume forms so grotesque as these, the circumstance naturally raises a suspicion of the soundness of the doctrine itself; and the language of such followers of Hobbes as Bentham and Helvetius certainly does not diminish this impression. This appears to have been felt by John Stuart Mill, who has attempted to refine this doctrine of Hedonism by dividing pleasures into higher and lower, introducing a qualitative as well as a quantitative classification. It has been well objected by Lecky and Martineau, that this is in reality to abandon Hedonism, for the scale on which pleasures are measured in order divided into higher and lower, as distinguished from stronger and weaker, must be one distinct from that of pleasure.

This doctrine is however asserted to be greatly strengthened by the hypothesis of evolution; and Mr. Herbert Spencer has made this hypothesis the foundation of the system of ethical philosophy, which he has propounded in his *Data of Ethics*.

This recourse to Evolution looks like a confession that Hobbes and Bentham were wrong after all, and that the love of right and of holiness are in the present stage of our development distinct from the love of pleasure. The first question then which we have to ask is this: Are these motives the same in kind now? The second is this: If they appear to be different in kind at present, does the doctrine of development (supposing it to be proved) diminish the importance of this difference?

If we may trust the verdict of our consciousness, the commands of conscience appear different in kind from the invitations of pleasure, and the sense of guilt from the disappointment felt at having missed some gratification. Let us take in addition to this a practical test.

Burns, in his *Epistle to a Young Friend*, writes thus:—

> "Where you feel your honour grip"
> "Let that aye be your border;"
> Its slightest touches, instant pause—
> Debar a' side pretences;
> And resolutely keep its laws,
> Uncaring consequences.

And we feel instantly the soundness, as well as the nobility of this advice, from which Hedonists like Mr. Herbert Spencer would scarcely dissent; for that writer states,* in the work to which I have already referred, that those moralists have ample justification, who, having decided that acts of certain kinds have the character that we call virtuous, argue that they are to be performed without regard to proximate consequences.

Now, if we for a moment imagine similar advice given with reference to the desire of pleasure; where you feel its slightest touch, yield to it instantly, uncaring consequences; we shall at once perceive it would, if followed, be advice of an absolutely fatal kind; but that its absurdity would be so glaring as to neutralize its power of mischief and probably to excite doubts about the sanity of the adviser.

Now, does the theory of development enable us to explain away the distinction between the commands of conscience and the invitations of pleasure which we find thus attested by our present

* *The Data of Ethics*, by Herbert Spencer p. 34.

consciousness and confirmed by our experience? Herbert Spencer maintains that it does. "As in other cases, so in this case," he says, "we must interpret the more developed by the less developed." It is always pleasant in controversy to be able to find a point of agreement, and there is in this sentence of Mr. Spencer's a principle involved which I entirely agree with him in holding to be a valid one for the purpose of this inquiry. By the words, "as in other cases, so in this case," we are reminded that the perception of the difference between right and wrong, holiness and sin, is not the only perception of which the doctrine of Development professes to reveal the genesis and growth, and are warned that for all alike the same method of interpretation must be employed.

Do we, then, in other cases interpret the more developed by the less developed? In his *Data of Ethics*, Mr. Spencer devotes a chapter to *The Biological View*, in which he gives the natural history of the earliest stages of the development of conscience. He there* carries us back in

* Page 82.

thought to the far-distant period when consciousness first began to dawn in some rude organism on our globe, and assures us that the creature's first sensation must have been one of pleasure prompting persistence in the absorption of its food.

A feeling of pleasure was thus the "less developed" form, which has expanded in the course of ages into a "more developed" form, comprising not merely the voice of conscience, but also what we are accustomed to call our five senses ; and in this fact we have an opportunity given to us for the application of Mr. Spencer's test. Do we in the case of our senses interpret the more developed by the less developed, and seek the meaning of the facts about the universe which they appear to reveal to us in the simple feelings of pleasure and pain from which they have been evolved ; or do we, on the contrary, hold that each successive stage of development has opened new gateways of knowledge, revealing realities unknown before.

If our perceptions of merit and of guilt, of

justice and of injustice, of sin and of holiness, must be denied to possess objective validity when they appear to reveal anything different in kind from the primitive feeling from which they are supposed to have been evolved, then must we transpose the application of Herbert Spencer's principle, and say that, as in this case, so in all other cases, "we must interpret the more developed by the less developed." The true interpretation of all that we seem to ourselves to perceive, of the harmonies of music or the beauties of art or the wonders of science, must be sought in "the less developed" perception which ages ago dawned in the consciousness of some creature of simplest organism, when it first experienced a thrill of pleasure as it absorbed its food.

In the opening of this lecture I referred to the assertion of Bishop Butler, that any opinion of Necessity which is destructive of religion, must also be a contradiction to the whole constitution of nature and to what we may every moment experience in ourselves, and so must overturn everything. That this should be so is what we might

have expected to find, on the assumption that Religion and Nature have the same Author; and I believe that the light which is cast upon these problems by the discoveries, and also by the speculative thought of our day, only makes this truth clearer; for it shows us that the principal arguments on which Determinists now rely, would, if pressed as they must be pressed in order to destroy the *arbitrium* of the Will, destroy at the same time its agency, and reduce man to an automaton; and that the method of interpretation which is relied on as being able to destroy in the crucible of its analysis the reality of moral distinctions must, if it be so used, also be applied to the senses, through which we have obtained our knowledge of Nature.

LECTURE VI.

KANT AND THE MORAL PROOF.

"*Lo, these are parts of His ways.*"—Job xxvi. 4.

LECTURE VI.

KANT AND THE MORAL PROOF.

THE teaching of Kant about the nature and limits of the various proofs of Natural Theology has produced far-reaching results, influencing the thoughts and opinions of multitudes who have never read a line of his writings. Ulrici, in one of his works,* comments on the fact that since the appearance of Kant's celebrated *Kritik*, the opinion has become widespread in Germany, both among believers and unbelievers, that the existence of God cannot be proved. Even theologians, he says, join freely with the rest in deriding all attempts at proof as vain, and suppose that they are thus rendering a service to the faith which they preach. And no one who is conversant with matters of this kind can fail to observe the marked change in the way of regarding this great question which has become apparent among ourselves on

* *Gott und die Natur.* Ulrici. S. 1.

the expiration of the usual interval after which the fashions of speculative thought which have prevailed in Germany are adopted in our islands.

According to Kant, it is the moral proof alone which reveals to us the character of God ; and he further maintains it to be the only proof which makes Him known to us as Infinite, All-wise, and Almighty ; but if we fancy that, having gained these truths from this source, we are at liberty to add them to the conclusions that we have drawn from the appearance of Design in Nature, we are met by his peremptory prohibition. He teaches, indeed, that the chief strength of the Design argument lies in the fact that (without perceiving what we are doing), we constantly connect it in our minds with the powerful moral proof ; but this union of the two he pronounces to be altogether illegitimate. The moral proof cannot lend any part of its strength to the physico-theological, or supply any of its deficiencies ; and conversely, it does not stand in any need of its assistance. The two are totally separate from each other, and have no points of contact.

The moral proof which Kant considered so powerful, assumes in his hands a purely subjective character. The starting-point of his argument is the fact of the categorical imperative issued by our practical reason, which bids us to act solely on that maxim whereby we can at the same time will that it should become a universal law, and forbids us to allow any other influence to interfere with our action. This imperative, he maintains, requires for its validity only one postulate, the freedom of the will. But, he goes on to say, we are inhabitants of the world, whose lot is bound up with the other existences in it ; and the moral law sets before us as a goal of our effort the promotion of the happiness of reasonable beings in proportion to their obedience to the moral law ; now, our endeavours are limited, we are surrounded and hemmed in on all sides by the system of the universe of which we form a part ; and the question arises, what is the reciprocal relation of this state of things to our moral aim ? If it be a merely mechanical system, then there is nothing in nature outside us which cares for this aim or will help us

in it, except now and then, and that merely by chance. We are surrounded, if this be so, by a mighty system of mechanism to which it is perfectly indifferent whether virtue is rewarded or wickedness is triumphant; to the laws of this unmoral system men are subject like the beasts of the earth, until one wide grave engulfs them altogether, noble or ignoble, it matters not which.

Accordingly, the man who is striving after the right, if he is not to give up as impracticable the aim which he has and ought to have before his eyes, but is to obey the call of his inward moral guiding principle, must, in order to conceive the possibility of the aim set before him, assume the existence of a Moral Author of the universe, that is of God.

This moral proof, he says,* is so far from being new, that so soon as men began to reflect about right and wrong, at a time when as yet the appearance of Design in Nature awakened no interest in them, they already found it almost impossible to

* *Kritik der Urtheilskraft.* § 88; B. 5; S. 472. Hartenstein's Edition.

believe that it can in the end be all the same whether a man has been true or false, a regarder of right or a perpetrator of injustice; it was as though they heard a voice within them saying that there must be a difference. The trust which this promise of the moral law inspires is (he says) exactly expressed by the Christian word "faith," in adopting which he defends himself against the charge of a dishonest imitation of Christian language by saying that this is not the only instance in which that wonderful religion has enriched philosophy with far more distinct and far purer moral conceptions than it had before.

He especially calls our attention to the fact, that whereas from Nature we could at most infer only very great power and very great wisdom, but could never rise to the idea of an infinity of power and wisdom, it is by this proof that the required idea is given to us. "I find," he says, "that the moral principle admits as possible only the conception of an Author of the world possessed of the highest perfection; He must be omniscient, in order to know my conduct up to the inmost root of my

mental state in all possible cases and into all future time; omnipotent, in order to allot to it its fitting consequences; similarly He must be omnipresent and eternal."

While he thus dwells on the transcendent importance of the results which are yielded by this proof, he warns us again and again that they belong solely to the practical region of morality to be employed there in its behalf, and are not to be transferred out of it, or used to supply the deficiencies of the physico-theological proof. The moral proof adds nothing to our theoretical knowledge or belief; it does not authorise us to assert anything, but solely enables us to act with confidence in our strivings after the moral aim set before us.*

* "Dieses moralische Argument soll keinen objectiv-gültigen Beweis vom Dasein Gottes an die Hand geben, nicht dem Zweifelgläubigen beweisen, dass ein Gott sei, sondern dass, wenn er moralisch konsequent denken will, er die Annehmung dieses Satzes unter die Maximen seiner praktischen Vernunft *aufnehmen* müsse."—*Anmerkung*, § 87.

Die Wirklichkeit eines höchsten moralisch-gesetzgebenden Urhebers ist also blos *für den praktischen Gebrauch* unserer Vernunft hinreichend dargethan ohne in Ansehung des Dasein's desselben etwas theoretisch zu bestimmen. § 88.

As Kant contends that the moral proof cannot strengthen what he calls our theoretical belief, so he maintains that it needs no support from it, but can "abide in its strength" without the help of any other proof; and he asserts that it would be possible to have faith in it without any positive theoretical belief in the doctrine of Theism. This, however, is not a sufficient test of the complete absence of connection between the theoretical and practical beliefs which is maintained by him; there is a further and a severer test to be applied. It is necessary to ask the question, Would it be possible to combine this practical belief in God, which he speaks of, with positive theoretical disbelief in His existence? Kant himself practically forbids us to assert that it could; for, answering a strictly analogous question about the reality of the proposed moral aim, he says that a dogmatic unbelief cannot co-exist with the rule of the moral maxim * in the mind, for

* Ein dogmatischer *Unglaube* kann aber mit einer in der Denkungsart herrschenden sittlichen Maxime nicht zusammen bestehen (denn einem Zwecke der für nichts, als Hirngespinnst erkannt wird, nachzugehen, kann die Vernunft nicht gebieten).—*Kritik der Urtheilskraft*, § 91.

it would be impossible to pursue an aim which was recognised as nothing but a figment of the brain. If the same sound principle is to dictate our answer here, and we are right in asserting that a positive theoretical disbelief cannot co-exist with a practical belief, the theory of the absolute independence of these beliefs breaks down; for it is not possible to maintain that a particular belief is of such a nature that its establishment can by no possibility confirm a second belief, once it has been admitted that the contradictory of the second would necessarily overthrow the first.

But I believe that it is possible, not only to show that there must be points of contact between the beliefs, but also to find a principle by means of which all the proofs of Natural Theology, subjective and objective, may be connected.

We have seen how a well-known teacher of physical science, when defending the hypothesis of a luminiferous æther and answering the objection that, although the phenomena occur

as if the æther existed, a demonstration of its existence is still wanting, replied to such objectors by showing that our belief that our fellow-men are possessed of reason, is absolutely nothing more than an hypothesis which accounts for the facts. There are few doctrines, if any, which we look upon as more certainly true than that which teaches that our fellow-men are conscious beings; so that we need not be surprised or offended if the principle which is the sole foundation of this doctrine, should also prove to be that one which will unite the various proofs of Natural Theology. An hypothesis may command various degrees of assent, from one so faint as to be scarcely distinguishable from suspense of judgment, to one which amounts to absolute certainty, as is the case with the hypothesis about our fellow-men. As we question the phenomena, and find the number of facts increase which a particular hypothesis will explain, its probability increases likewise.

Now, in the previous stages of our argument, adducing chiefly the evidence of well-known

scientific men who are generally supposed to be unfavourable to Natural Theology, we found that the author of the doctrine of natural selection describes the contrivances and beautiful adaptations in nature as transcending in an incomparable degree the contrivances and adaptations which the most fertile imagination of the most imaginative man could suggest; while Helmholtz, speaking of an altogether different department of nature from that which Darwin was considering, declared that it coincides with what the wisest Wisdom may have devised beforehand. I referred also to a fact of which the writings of scientific men furnish abundant evidence, namely, the circumstance that the most embittered opponents of Theism, when they are describing many of the phenomena of nature, appear to find it impossible to do so without frequently using language which suggests the idea of design; and we saw that in purely scientific arguments scientific men regard it as a very strong confirmation of their doctrines when they can thus show that their opponents find it im-

possible to avoid the use of terms characteristic of those doctrines; the only reason why this argument should be anything better than a mere *argumentum ad hominem* consisting, of course, in the evidence thus afforded that events occur as if the hypothesis were true.

There was here, however, an alternative hypothesis offered, in the doctrine of the survival of the fittest in the struggle for life; and the best way of deciding the matter appeared to be the examination of some other phenomenon in nature which should resemble these adaptations in requiring some explanation, while it should differ from them by lending itself to one of these explanations and not to the other.

Such a phenomenon seemed to be presented to us in the existence of beauty everywhere in the universe. That this circumstance requires some explanation appeared to be practically admitted by the elaborate attempts of Darwin and others to account for the beauty of flowers and of birds, while, at the same time, we saw that it was not by *natural* selection, properly speaking, that they

endeavoured to solve this problem, but by selection exercised by creatures endowed with life, by insects which fertilized the more beautiful flowers, and by birds choosing the more beautiful of their kind as their mates. I accepted this explanation provisionally, though it is one against the sufficiency of which grave objections may be brought: instead of disputing it, I preferred to call attention to the fact that, even if it were adopted to the fullest extent possible, it would only account for a very small part of the beauty of the world. For Nature displays beauty on every side, and that upon a scale so stupendous as to be utterly beyond the power of any finite being known to us, or whose existence we have any reason to suspect. But if the glory of the starry heavens and the splendours of sunset and sunrise are too vast to be affected by the agency of any subordinate being, neither, it is plain, can they be the result of the survival of the fittest out of a number of chance combinations, the most beautiful universe having been preserved, while many less beautiful ones perished through this deficiency of theirs. The

very grotesqueness of such a statement shows how utterly inapplicable the doctrine of natural selection is to this case.

When, on the failure of the hypothesis of natural selection here, we examine the hypothesis of Design, to see if it may promise to afford an explanation, we find in every work of man that not only is design a cause of beauty but that it is an indispensable condition of its appearance. The result is the same in whatever department we may examine; in painting, in sculpture, or in architecture, beauty never comes by chance to grace the work of a careless and ignorant workman. Thus, the wide-spread prevalence of beauty in the world is a fact which harmonizes with the hypothesis of Design; and the universe is in this particular constituted as if it had an Intelligent Author.

And now, when we turn to the inner world of our consciousness, our attention is challenged by something which Kant in an often-quoted passage * coupled with the starry heaven as its only

* Cf. *Kritik der Practischen Vernunft*, II. Th. B. V. SS., 167,

parallel in sublimity. "Two things," he said, "fill the mind with ever new and increasing admiration and awe, the oftener and the more steadily we reflect on them: *the starry heavens above, and the moral law within.* I have not to search for them and conjecture them, as though they were veiled in darkness and were in the transcendent region beyond my horizon; I see them before me and connect them directly with the consciousness of my existence." And in another place he says:* "Every man has a conscience, and finds himself observed by an inward judge which threatens and keeps him in awe (reverence combined with fear); and this power, which watches over the laws within him, is not something which he himself (arbitrarily) *makes*, but it is incorporated in his being. It follows him like his shadow, when he thinks to escape. He may indeed stupefy himself with pleasures and distractions, but cannot avoid now and then

168, Hartenstein's Edition. Kant's *Theory of Ethics*, translated by Abbott, p. 260.

* Abbott's *Kant*, p. 321.

coming to himself or awaking, and then he at once perceives its awful voice. In his utmost depravity he may, indeed, pay no attention to it, but he cannot avoid hearing it."

Now, it is conceded by men of almost all schools of thought in the present day, not excepting the Hedonistic or Utilitarian school, that the inward voice here spoken of discharges an office which is of the utmost benefit to man; indeed, the utilitarian interpretation of conscience given by such a representative of that school as John Stuart Mill, is a striking tribute to this its beneficial tendency; for by maintaining that it is nothing else than a feeling of regard to the happiness of others, they recognise in a most emphatic way that its tendency is to promote happiness. And, indeed, Mr. Herbert Spencer, in the preface to his *Data of Ethics*, tells us that he was constrained to hasten the publication of that work, partly from fear of the disastrous results which might follow if he did not at once furnish a new support to moral injunctions, now that they "are losing the authority given by their supposed sacred origin."

While the beneficial tendency of conscience and of the moral law which it enforces is thus practically recognised by all, there is also a general admission of the truth of the definition of the command of that moral law which I have already quoted from Kant, "Act only on that maxim whereby thou canst at the same time will that it should become a universal law." Thus, whatever other hypothesis the fact of the existence of conscience may be consistent with, it is at least consistent with this one—that it has an Author who desires the welfare of man, and whose will coincides with a principle which is fitted to be a universal law.

But it is not only the advantageous tendency of conscience that we have to take account of; its majesty and grandeur also challenge our attention. In it are combined two distinct characteristics which we have noted in Nature—utility and sublimity. We have many very useful instincts which perform their proper work with great efficiency; but if a philosopher should compare any one of them to the starry heaven,

he would certainly cover himself with ridicule; yet no one ridicules the comparison in this connection, because men instinctively feel that there is a sublimity manifested here in the little world of our consciousness which is not unworthy of being chosen as a parallel to the sublimity which is manifested in the universe.

Thus, in addition to the beneficial tendency of conscience and the conformity of its commands to that which is fitted to be a universal principle of action, we have to add the fact that this inward voice speaks with an authority and majesty which fully accord with what we should have expected beforehand to find in its dictates, on the hypothesis that it had been implanted in us by One who is the Judge of all the earth.

As we contemplate further this authoritative command, we are struck by the circumstance, that although it is issued from within, we find ourselves compelled to obey it or incur a feeling of guilt by disobeying it, as if it was the command of another than ourselves who is invested with rightful authority. Kant, as is well known, explains this

double personality by a reference to the *homo noumenon* contrasted with the *homo sensibilis ;* but this hypothesis of his in no way conflicts with my argument, which goes a step behind this suggested explanation, and appeals to the fact that the *homo noumenon* is thus constituted. Kant himself admits that there lies a paradox in the fact "that respect for a mere idea should yet serve as an inflexible precept of the will;"* and in another place† he characterizes this as something strange and having no parallel in all the rest of our practical knowledge ; and yet again‡ he pronounces it to be, for human reason, an insoluble problem.

Now the fact which I claim as in harmony with the hypothesis of the Divine authorship of conscience is precisely this admitted paradox, this strange fact, this insoluble problem, that this voice, which is not arbitrarily made by us but is incorporated in our being, should always present to our wills as a principle of action a mere idea, the idea of Right.

* *Grundlegung zur Metaphysik der Sitten.* Abbott's transl., p. 57.
† *Ibid.*, p. 119. ‡ *Ibid.*, p. 165.

We have now, I think, reached a point of view from which it no longer appears impossible to establish a connection with the subjective proof which has been already described. For the fact insisted on by Kant, that the same awful voice which sets before us a moral aim should also in the very act of so doing lead us to a belief in a Divine Being to whom that aim is not indifferent, is surely a subjective fact which harmonizes most fully with the belief that such a Divine Being exists and is in this way revealing Himself to us; and (though Revealed Religion is not now my subject) I may remark in passing, that the fact that a word to which Christianity has given a new meaning should, in this new meaning, be the only one which adequately expresses the trust which the promise of the moral law seems to demand from us, would appear to harmonize in a very significant way with the hypothesis that they have both the same Author.

The objection, that the Physico-Theological argument can only prove a very great degree of power and wisdom in the Author of Nature, and

not an infinite wisdom or power, is urged by Kant as if it were fatal to that mode of proof. To this Martineau has replied by showing, that to an *a posteriori* argument this is no disparagement,* that the limitation objected against is simply that which attaches to all inductive reasoning, so that the very same objection might be brought against our belief in the universality of the law of gravitation or any other natural law.

This is a perfectly just reply to a reproach levelled against this argument for not proving what it was never intended to prove; but when Martineau goes on to say, "If there is as little chance of the Divine Wisdom coming to an end at the confines of our experience, as of matter ceasing to gravitate among invisible stars, we may be content for the present, and postpone our anxieties till this Cosmos is done with or no longer shuts us in," I think that he here goes beyond that in which the consciousness of most men will bear him out. It may be sufficient for us to know that the law of gravity prevails as far

* *A Study of Religion*, vol. i. p. 332.

as man's observation extends, without troubling ourselves about its possible limitations beyond the confines of the known universe; but should we be satisfied in presence of a similar doubt about the omnipresence or omnipotence of God, however remote the suggested contingency might be? I do not believe that we should. But it is impossible that we should be satisfied to rest under such a doubt in this matter, just because in this connection we have got the required idea already, and the very strength of the mental grasp which we have of the conception makes it impossible for our minds to rest in any statement of the case which does not include it. I believe that Kant is right about the source from which we derive it, so far as Natural Religion is concerned; but at the same time, if he were right in maintaining that this origin makes it impossible for it to affect our theoretical knowledge in any way, he would have proved that he himself had no warrant for introducing this idea into the discussion of the Physico-Theological argument.

It is in perfect harmony with the supreme authority which the moral law claims over our whole nature, that it should be the same voice which issues its commands, which also makes known to us this transcendent secret about its Author: that, while the message of the Creator's wisdom and power is written on the earth beneath and the heavens above, the infinity of His wisdom and the almightiness of His power are disclosed to us only in the revelation of His holiness.

The significance of the fact which is thus noted by Kant will, I think, become more apparent the more we reflect on the position which conscience occupies in the inner world of our thoughts and feelings. Whatever theories men may advance about its origin and development in the past, if, taking the present facts of the case (as we do in interrogating our other faculties), we regard it as it now is, the consciousness of most men will alike attest the truth of the words of Butler,* who speaks of it as "a faculty, in kind and in nature,

* *Sermons preached at the Rolls Chapel.* Sermon II., *Upon Human Nature.*

supreme over all others," and of Kant,* who describes it as "an inward judge," by whom every man "finds himself observed," and as a "power which watches over the laws within him." It is this faculty (whose authority we cannot help feeling, even while we may rebel against it,) which, in the act of setting before us a moral ideal, appears at the same time to give us the assurance and promise that there is a Judge of all the earth, and that He will do right.

Nor can the appeal to this witness be decried as an attempt to employ its authority for the determination of questions which are altogether out of its province; for a moment's consideration will show us that the objections to Theism which are most keenly felt by numbers at the present day have originated from contemplating the sterner aspects of Nature in the light of the moral ideal which this inward voice sets before us. If man were merely a sentient and intellectual being, if he had no moral sense, he would of course shrink from suffering at least as

* Part of the passage already quoted from the *Tugendlehre.*

much as he does now; but, at the same time, if the other proofs of Theism satisfied his intellect, he would have no more reason for doubting that there is an Author of Nature because Nature sometimes caused him pain, than he would have for doubting the existence of his fellow-men, when their creations or their acts similarly affected him. But, as he is actually constituted, his difficulties in this matter arise mainly from the fact that the uniformity of Nature, though seen to be on the whole beneficial in its tendency, yet, at the same time, in some of its results, appears to conflict with the ideal which he has derived from this inward voice. It is a significant fact, that many of the objections brought against Theism may show us how closely conscience has led men to connect the righteousness of God with His existence; for each moral difficulty which the world appears to present is at once regarded by the objector as a reason for doubting, not the righteousness of God, but His existence. Most men whose consciences have ever been quickened by contact with the light of Christianity, even though

it be a light which they reject, would find it practically impossible to believe in the existence of a God who was the Author of Conscience and who at the same time was not perfectly righteous; for such a belief would oppress the mind and heart with a weight too great to be endured.

We may, I think, find in one of Mill's posthumous works, a remarkable illustration of the power with which the moral sense impresses upon the heart of man this truth about its Author, even where no auxiliary influences combine to enforce its message.* That writer, whose education had been carefully and skilfully directed by his father, with a view of preventing his being influenced by love or by reverence for God; who had been taught, in fact, to look on every form of Theism as possessing a merely historical interest; and who had besides accustomed himself to concentrate his attention on the very aspects of Nature from which objections to Theism are most commonly drawn; nevertheless was ready to encounter the formidable intellectual difficulties

* *Nature*, the first of the *Three Essays on Religion*.

besetting the belief in an Author of Nature of limited power, rather than adopt what he regarded as the other alternative.

Nevertheless the solution of the difficulty which was thus proposed by Mill, in addition to its other defects, conflicts instead of harmonizing with the utterance of that inward voice which, in presence of wrong apparently triumphant, encourages us to appeal to One who will vindicate the right. For its message to us does not merely speak of One whose righteousness we may believe in though we are doubtful about the extent of His power; but of a Judge of all the earth who shall do right, One who is omnipotent, and therefore cannot fail, and omniscient, so that He cannot err. This, and nothing short of this, is what it promises, as Kant, I think, has convincingly shown.

This theory of Mill's would differ from the Christian conception of God by introducing into it the anthropomorphic characteristic of limitation; whereas in the present day the favourite taunt against Christianity and against every form of Theism is the charge of Anthropomorphism. It

is only, we are told, by the complete elimination of anthropomorphism from the problem that a solution of the mystery of pain will be attainable. Then, and not till then, the difficulty will disappear. This charge is, indeed, a kind of stock phrase in the present day, by the employment of which every proof of Natural Theology is supposed to be at once disposed of. Originally a description of the doctrine of those who attributed to the Supreme Being a human body, this word, like many other terms of reproach, has been diverted from its proper sense, so that now its meaning varies with the standpoint of its employer. Thus Herbert Spencer applies it to all Theists, while Büchner* applies it to Herbert Spencer, saying that in "the Unknowable" he finds the "same anthropomorphic disfigurement" that he does in Theism; and indeed, if this epithet is applicable to all who attribute to the original principle of things anything which we find in man, it must apply with equal force to Büchner himself, for he represents force and matter as being

* *Kraft und Stoff.* Büchner.

the original principles of the universe; yet force, as we have seen, is acknowledged by the greatest thinkers in the present day to be a conception of anthropomorphic origin, and as such it was rejected by Comte, while matter is certainly to be found in the frame of man.

Waiving however the question of inconsistency and considering the problem as it is presented to us by a writer who ranks so high in the world of thought as Mr. Fiske,* we may inquire in what way he proposes to accomplish its solution by eliminating from it the element of anthropomorphism. We must bear in mind that he does not profess to solve this problem by substituting a lower form of Theism for that which Christians believe, but a higher one. "Theologically phrased," he says, "the question is, whether the creature is to be taken as a measure of the Creator. Scientifically phrased, the question is, whether the highest form of Being as yet suggested to one petty race of creatures by its ephemeral experience of what

* *Outlines of Cosmic Philosophy*, by John Fiske. Vol. ii., pp. 430, 431.

is going on in one tiny corner of the universe, is necessarily to be taken as the equivalent of that absolutely highest form of Being in which all the possibilities of existence are alike comprehended." And in the following chapter he thus writes,* "Whether it be true or not that within the bounds of the phenomenal universe the highest type of existence is that which we know as Humanity, the conclusion is in every way forced upon us that, quite independently of limiting conditions in space or time, there is a form of Being which can neither be assimilated to Humanity nor to any lower type of existence. We have no alternative, therefore, but to regard it as higher than Humanity, even 'as the heavens are higher than the earth;' and except for the intellectual arrogance which the arguments of theologians show lurking beneath their expressions of humility, there is no reason why this admission should not be made unreservedly, without the anthropomorphic qualifications by which its effect is commonly nullified. The time is surely coming when the

* *Ibid.*, pp. 450, 451.

slowness of men in accepting such a conclusion will be marvelled at, and when the very inadequacy of human language to express Divinity will be regarded as a reason for deeper faith and more solemn adoration."

Having thus contrasted the higher conception of Cosmic Theism with that which it is to replace, Mr. Fiske goes on to apply it to the very problem which is now before us, with an evident conviction that the result will establish its incontestable superiority. He tells us that the solution of this problem is to be found in the fact that the rigid uniformity of natural law, which is the source of our perplexity, is in reality part of our education.

*"The law which couples imprudent exposure with bronchitis and pneumonia will not cease to operate, though thousands die; nerve tissue will not renounce its properties, to prevent indulgence in evil thoughts and yielding to sinful inclinations from depraving the imagination and weakening the will. To be delivered from evil, we must avoid the mal-adjustments of which evil is the

* *Outlines of Cosmic Philosophy*, vol. ii., pp. 461, 462.

consequence and the symptom. Hence, while to the aboriginal man malevolence was the only conceivable source of suffering, the reverent follower of science perceives the truth of the paradox, that the infliction of pain is subservient to a beneficent end. 'Pervading all nature, he sees at work a stern discipline, which is a little cruel that it may be very kind.'" And a little later he adds, that with Michelet we come to regard pain as in some sort the artist of the world, which fashions us with the fine edge of a pitiless chisel, cutting away the ill-adjusted and leaving the nobler type to inherit the earth.

The considerations upon which the author dwells are the very same which have sometimes been brought forward by theologians as establishing the very doctrine whose untenable nature Mr. Fiske appears to believe that he is showing. In a sermon on *Theism and Modern Science*, after speaking of the rigorous uniformity with which the laws of nature are maintained, Dr. Salmon contends that,* "Ere this fact induces us to con-

* *Non-Miraculous Christianity and other Sermons*, by George Salmon, D.D., p. 107.

clude that the universe is not ruled by a Being of surpassing wisdom and goodness, we must convince ourselves that it is more worthy of such a Being to be changeable than uniform, more befitting Him to alter His plans in compliance with each wish of His creatures than to teach them to rule themselves according to His will. In short, all turns on this, that we live in a world of which evolution is the law, in which things are not at once framed in the highest perfection of which they are capable, but grow to it. Man himself is thus in a constant state of education and progress. And the very condition of his advancement is, that he can place undoubting trust in the truth and faithfulness of Him who displays Himself in nature. Whatever he has once learned as to the rules according to which He acts, may be relied on as sure not to be altered."

Mr. Fiske's reason for drawing an opposite conclusion from the very same premises is thus stated: "The fact stands inexorably before us, that a Supreme Will, enlightened by perfect in-

telligence and possessed of infinite power, might differently have fashioned the universe, though in ways inconceivable by us, so that the suffering and the waste of life which characterize nature's process of evolution might have been avoided"; a passage which, taken by itself, would lead us to suppose that he contemplates this possibility as something higher and better than that which is realized in the actual universe. Nevertheless the whole argument of his work forbids us to adopt this view. He is, as we have seen, professedly making known to us a conception of the Supreme Being which he believes to be, not lower, but higher and greater than that which we have hitherto entertained; and he can scarcely mean to contend that the lower conception of the Supreme Being would justify us in expecting a higher result from His agency while the higher conception perfectly harmonizes with the lower result. The whole tendency of his remarks upon the existing constitution of nature is to show that the result itself is in reality grander than what we in our short-sighted impatience might have preferred.

Why should he therefore assume, that if the Author of Nature were an intelligent Author, He could not possibly have ordered the course of nature in the way which he so warmly praises? It was surely the presence, not the absence, of intelligence in both of the writers whom I have quoted which enabled them to discern its merits.

It is asserted by Mr. Fiske that Cosmic Theism is in every way more satisfactory alike to head and heart than the most refined anthropomorphism. He here touches upon a question which it is proverbially difficult to settle by discussion; for the propounder of any particular theory can always maintain that those who declare themselves unable to derive satisfaction from it do not really understand it. The inability, however, to perceive its superior capacity to satisfy the human heart is far from being confined to theologians who are unwilling to give up their Anthropomorphic belief, for it is shared in by many of those who have renounced that belief altogether.

I have already quoted in a previous lecture a passage from a well-known work, entitled *A*

Candid Examination of Theism, which most clearly manifests this inability in its author; and similarly we find Mr. Morison, in his *Service of Man*,* asserting that "an anthropomorphic God is the only God whom men can worship, and also the God whom modern thought finds it increasingly difficult to believe in." It is a significant fact, that the startling phenomenon of the rise and development of Pessimism in Germany has coincided most ominously with the abandonment by many of its inhabitants of faith in a God who has created man in His image. Nor is it strange that this creed of despair should be a result of the belief that there is nothing around us or above us but an unconscious system of Nature, from which it is vain to expect the least sympathy with our highest aspirations and aims.

I do not urge, however, that belief in a Personal God must be true merely because it satisfies the yearnings of the human spirit; but I maintain rather that it satisfies them because it is true. It is an unfair way of stating the case which

* P. 49.

represents that because we find intelligence in ourselves we are unwilling through intellectual arrogance to admit that it is not to be found in the Supreme Being. We claim that we are justified in our refusal to adopt any such conclusion by an argument which a philosopher so little prejudiced in its favour as John Stuart Mill admitted to be "an argument of a really scientific character, which does not shrink from scientific tests, but claims to be judged by the established canons of Induction." * The original force of this argument has been much more freely admitted by many of the leading opponents of Theism since they have come to believe that Modern Science has put into their hands, in the theory of the "Survival of the Fittest," an alternative explanation of the facts on which it is based. Writers like Du Bois-Reymond do not now attempt to conceal their conviction that but for that theory it would be almost irresistible.

The stress, however, which is laid upon this

* *Three Essays on Religion*, by John Stuart Mill, p. 167.

hypothesis as an explanation of the appearance of Design in Nature, only serves to bring into clearer relief another phenomenon to which it cannot possibly be made to apply. The beauty of Nature cannot be explained by regarding it as an instance of the survival of the fittest, for it is not in separate organisms only that it is to be found, but also on the vastest and most stupendous scale in the universe at large; and there is no room for competition, for the universe (as Hume reminds us) is a singular effect. The argument which contends that there is nothing strange in the fact that the world in which we live is habitable, because only habitable worlds can have inhabitants, is also inapplicable here; for there is no assignable reason why the world might not have been inhabited, though it had been utterly devoid of beauty.

It may be noted that this characteristic of Nature has a special bearing upon this part of our inquiry, in which the doctrine assailed is that which teaches that man is made in the image of God. We have seen how the ideality of beauty

impressed itself upon the mind of Kant; and, though perhaps it would be too rash a generalization if we asserted that the appreciation of the picture presented by the earth and sky is the sole prerogative of man, certainly from our observation of the animals that surround us it would seem that, even in the most intelligent of them, the most glorious spectacle of nature wakes no sign of feeling or attention. The dog at its master's feet loves to sympathize with him, when it can; but as he gazes entranced at the panorama of earth and sky, we can see that it cannot follow him; the scene has a language for one of those two companions which it has not for the other. Now, if I come across an inscription which is meaningless to my companions who belong to other lands, whilst to me alone it speaks in my own mother tongue, I conclude that the author speaks my language, and that I speak his, or at least one of his if he has many.

It is, I need scarcely say, the latter belief which we hold concerning Him whose glory the heavens declare. If the charge of Anthropomorphism be

intended to imply that in attributing intelligence to the Author of the universe we fancy that we know all about His nature and are setting up an ideal which is consistent according to a human standard, the accusation is an absolutely false one. Christian Theists at least would have no excuse for indulging in any such delusion. The doctrine which our services bring before us to-day * is one which has often been made a special object of attack by its opponents for the very opposite reason, that is, because it does not give us an ideal consistent according to a human standard.†

But it is not in the New Testament only that we are guarded against this error. Again and again does the Old Testament warn us against fancying

* This sermon was preached on Trinity Sunday.

† It may also be noted that there is an objection to Theism on which much stress is laid by Herbert Spencer, and which can only be brought against a Theism which rejects the doctrine of a plurality of Persons in the Godhead. In an article entitled *Religion: a Retrospect and a Prospect*, he contends that intelligence, as alone conceivable by us, presupposes existences objective to it, and that before the creation there could not have been such existences. Whatever be the force of this objection, it does not apply to the doctrine of the Godhead which has always been held by the Church Catholic.

that God is altogether such an one as ourselves. "My thoughts are not your thoughts, neither are your ways my ways, saith the Lord. For as the heavens are higher than the earth, so are my ways higher than your ways, and my thoughts than your thoughts." Lo, these are parts of His ways, but how little a portion is heard of Him! Yet whilst we have strong reason for sometimes dwelling on the negative aspect of my text, "We know in part," part and not the whole, I believe that we have equally strong reason for dwelling sometimes upon its positive aspect, we *do* know in part, it is a real knowledge;* we see Him indeed, through the

* The opinion that we cannot possibly know anything of a Mind which is infinite, appears to have originated in forgetfulness of the essential difference between our knowledge of mind and of material objects. The latter we know only as extended and as defined by the limits which constitute their outline. We cannot form any idea of them at all without attributing to them a certain magnitude. We can as little conceive them as infinitely small as we can conceive them as infinitely large. Mind, or spirit, on the other hand, we do not know as extended, or as defined by any limits constituting its outline; nor do we require to attribute to it a certain magnitude in order to form an idea of it. We know it in quite another way, through the results of its agency interpreted by our self-knowledge. Thus, a child knows perfectly that its mother is possessed of intelligence and love, though her intelligence far

medium of our nature and our faculties, as in a mirror darkly, they determine for us the forms in which it is possible that He should reveal Himself to us; but He Himself has made that mirror, He has given us that nature and those faculties through which His Revelation, alike in Nature, in Conscience, and in His Word, is apprehended by us; and therefore, as Professor Herbert has well said, "We believe that though it may well be that He possesses other and higher attributes, these will not falsify, however they may excel the conceptions which He has taught us to entertain of Him."* The voice which He has implanted in us, as well as the outward Revelation which we believe to have come from Him, tells us that He is God who cannot lie, and who has not said to the children of men, Seek ye Me in vain.†

exceeds its own, and though it may have no idea at all how far it exceeds it.

* *Modern Realism Examined*, p. 436.

† The line of thought followed in this paragraph was suggested to me by the late Professor Herbert's work, *Modern Realism Examined*, in which the relative reality and reliability of our knowledge of the Supreme is discussed with great ability. "It is," he says, "inconsistent to make free practical use of sundry other con-

ceptions, as relatively true, though merely symbolic, while the conception of God, similarly relative, is rejected on the ground of its relativity. • It is constantly assumed that our recognition of God should depend on our ability to know His essence ; but that is no more and no less possible in regard to Him than in regard to our fellows. We have such relative knowledge of Him as we have of them ; and it seems to be only because it is practically impossible to ignore them, while it is possible to ignore Him, that the one set of conceptions is taken and the other left."—P. 454.

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